

Special Features This Issue
"The Hunter Fleet on the Norfolk Broads",
"A Boat from Yesterday for Tomorrow",
"A Joe Dobler Skiff Returns" — "Building a Boat Shed",

messing about in **BOATS**

Volume 25 – Number 7

August 15, 2007



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Commentary...

Bob Hicks, Editor



In the July 1 issue I ranted on some about the high costs of rescue efforts undertaken by the USCG, other maritime agencies (harbor masters inshore), or good samaritans when people get into trouble they cannot (or will not try to) handle in recreational boats. As this issue goes to press we have had a couple of responses to my discussion which appear on the "You write to us..." pages. Both feel that publicly funded rescue efforts should be part of our small boating culture, while emphasizing that encouraging individual responsibility for one's own welfare afloat be a goal. I expect there'll be some more viewpoints in hand for publication by the time we go to press with the September 1 issue.

We have received a couple of news clippings from a local friend/reader that provide more material for discussion about this boating safety topic. Boating safety continues to be newsworthy in mass media as a subject of ongoing hand wringing by bureaucrats and safety gurus wishing to do something about it. Some 700 or so annual fatalities nationwide seem to be a major concern for these people, including some with no experience or understanding of recreational boating. It perhaps gives them a break from their ongoing inability to do much about the 40,000+ highway fatalities. This boating thing is small beer and can surely be sorted right out with some rules and regulations.

One of the clippings was all about all the sea kayaks and what are we gonna do about them. This was stimulated by the death of an experienced paddler who went out in rough sea conditions with a friend and eventually lost it. The friend got to a small island where he spent the night unable to communicate with the nearby shore, and when rescued the next day his friend was long gone. His kayak was found eight miles away, but not him.

What was a bit different about this was, for once, the hand wringers could not point to lack of any safety education as a contributing cause. It was a judgment error by experienced paddlers. How to deal with that? I think secretly they'd just like to ban kayaks. Not likely anymore, just like the more dangerous canoes (more annual deaths) cannot be banned after a century of established use.

A local kayak outfitter was interviewed for his viewpoint at least, sometimes the safety folks don't think to speak to someone who may know something about it. As there wasn't anything meaningful he could say about this particular situation not involving newbies, he offered up the comment that some people who come to rent his kayaks lie to him about their experience. How is he to know until they take boat and paddle and head out?

The other clipping reported on a man thrown from and struck by his boat, a 14' alu-

minum skiff which hit wakes ("just right" witnesses were quoted as saying!—just right?) on a busy local tidal river. As he went over the side the boat passed over him and the prop worked him over, not fatally. The harbor patrol officer stated, "It was, as they say, just an accident." No comments by anyone, including the reporter, on what oughta be done about this falling overboard from small boats situation or how all outboard props should have cages around them to keep them from chewing up their owners.

The underlying difference in the attitude about these two boating accidents is that the latter was a motorboat. Any boat without a motor is inherently dangerous, anyone oughta know that.

About Communicating With Us Via the Internet

Despite the fact that the email address we maintain at my daughter's place of business is intended for subscription fulfillment, a small but increasing number of you are using it to send on classified ads, articles, and correspondence intended for me. It's OK with me if you choose to do this, but please include your regular mail address in order that I may respond.

I have a long-standing distaste for the format of email letters (unlike the pleasure I get from reading printed, typed, or handwritten mail). This distaste is constantly reinforced by the sort of rubbish often incorporated into your emails by your providers. An example at the end of one reader's recent email message:

"Ahhh...imagining that irresistible new car smell? Check out new cars at Yahoo! Autos. http://us.rd.yahoo.com/evt=48245/*http://autos.yahoo.com/new_cars.html;_ylc=X3oDMTE1YW1jcXJ2BF9TAzk3MTA3MDc2BHN1YW1tYWIlsdGFncwRzbGsDbmV3LWNhcnM"

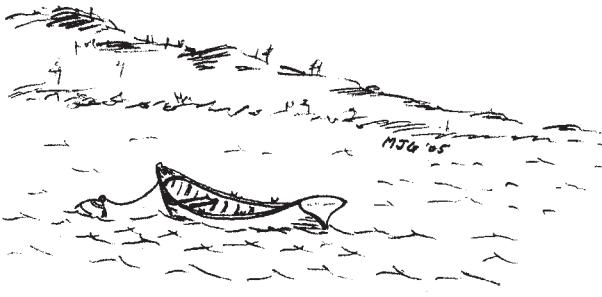
This cascade of letters and numbers which apparently is the website to which one is being urged to visit is incomprehensible to me. The "smell" to which it alludes is not irresistible for me (new car smell?). But I think this sales hustle, hung on a message intended for me from a reader, "smells" pretty bad indeed. Does anyone really welcome this sort of intrusion? I guess many do or it would not be there, it would not be "cost effective."

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On the Cover...

Californian Kim Apel had the opportunity to sail on the Norfolk Broads while on a trip to England and shares his experience with us in this issue.



By Matthew Goldman

From the Journals of Constant Waterman

Past the foot of the hill, back of our barn, Hungerford Brook makes its way toward the river. It passes behind the houses of our neighbors for half a mile before merging with Roaring Brook, which eventually becomes Whalebone Creek and flows into Whalebone Cove below the ferry landing. Hungerford Brook hasn't water enough to canoe. Roaring Brook has after a good rainstorm. I used to put in below the post office, just beneath the bridge on Route 82.

That's the bridge the flood swept away in 1982. A low pressure system parked at the mouth of the Connecticut River and redistributed Long Island Sound over six or eight towns. A foot of rain had fallen the first five days, eight more inches fell that final night.

That bridge stood 9' above the bed of the stream. When the dam at Urban's Pond caved in, acres and acres of water came hurtling downstream. Surprisingly, the dam on Clark Hill Road didn't break or even scour significantly. But all of that water wanted to join with the river quick like a bunny, to use one of my father's pet expressions. When it came to the bridge at the main road, it tore the concrete abutments out of the bank. The deck of the bridge collapsed and washed away.

That evening a woman from our village, a much-loved teacher returning from a meeting in Lyme, couldn't start her car. One of the fellows at the meeting offered to drive her home in his six-wheel dump truck. They came to where the bridge had been and saw a foot of water above the road. Just up to the hubs. The driver slowed a bit but didn't anticipate trouble. His truck disappeared in the torrent. It tumbled a couple of hundred yards, then hung up at the bend. The driver heroically tried to dislodge his passenger. He barely saved himself. He spent the rest of that terrible night clinging to a tree amid the flood.

Late the next morning I walked to where the bridge had been. The water had receded to waist deep. The sun shone brightly. The cable railings spanned a 20' gap in the road. The steel guard posts dangled ludicrously from the cables. Great slabs of concrete littered the bed of the brook. Downstream, exposed, the truck lay on its side. The rescued driver revived in intensive care. They buried our teacher from the larger church uptown. Even so, people stood in the back.

Hungerford Brook demolished the old bridge back of our barn. The bridge upstream remained but the bank on either side had scoured until no car could pass. Other towns had suffered similar damage. The local papers showed a car jammed in the crotch of a tree, 6' off the ground.

The piano factory in Ivoryton had half a million board feet of rough cut lumber, select grade maple and sugar pine, stacked and stacked in their yard. When the dam on Falls River failed all of that lumber fetched up in a field a mile below the factory. The insurance company declared the lumber a loss, free for the taking. I made three trips with a friend and we salvaged perhaps 4,000 board feet. That little field had a tangled crop of upended planks 10' deep in places. Falls River, 40' wide, tinkled merrily in its bed.

So cataclysm has its way with our world. All about are the ruins of bygone building. War and storm, eruption and rot, all have their way at last. Those of you who would live forever would need to mourn both friends and civilization. Evolution would pass you by, nations would disappear in strife, continents return to the ocean bottom. All this, and more, is in your head already. See to it that it has a place in your heart.

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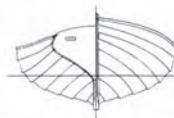
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The Spirit is Willing, But the Flesh is Weak

At 86 years of age I'm beginning to think that my body is trying to tell me something, and that is, "Benneck, you aren't getting any younger. You can't jump as you used to do. Your old skier's knees are also doing a bit more than just complaining mildly in the background. Don't you think it is time to give up your rowing/sailing activities and let the younger people enjoy what you have enjoyed for so long?"

So with a heavy heart, could you put the enclosed ads in your wonderful and always most entertaining publication. Hopefully the right person will become the new owner(s) of the Nymph and the Shellback and have as much fun with them, for years to come, as I have had (see Classified Marketplace. Ed.).

In a recent issue you ran an ad from Don Jordan, an old friend from Glastonbury, Connecticut, offering to give away a Neptune Mighty Mite 1.5hp outboard motor. Many years ago I sold that engine to Don for use as an auxiliary engine on his small sailboat. I, in turn, got it from an old friend of mine who originally lived in Wiscasset, Maine. He had a Klepper folding boat and paddled it on the local river. However, with Maine tides he rapidly found that trying to go back upstream against an outgoing tide was hard and very slow work.

As an engineer, his answer became, buy a small outboard motor to solve the upstream problem. He bought the Neptune Mighty Mite (that was why he only needed 1.5hp), designed and built a crossbar across the cockpit coaming to which he fastened the Neptune, and he was in business. Problem solved... or so he thought. He enjoyed a nice paddle down the river, then it was time to head upstream and get home again. He pulled out his crossbar, clamped it in place, installed the motor, wound the rope around the flywheel, and gave a pull.

The motor ran, the boat moved rapidly, but the running motor plus the motor weight at the end of the crossbar presented new steering leverage problems. To balance out the boat and keep from going in circles, he had to move to the opposite side of the Klepper cockpit, but then his arm wasn't long enough to reach the throttle or to reach the steering handle of the outboard.

What now?

I don't recall how he eventually solved the problem of reaching the running motor and shutting it off without capsizing the Klepper, but since he's still with us today, he did. Meanwhile, as an inveterate pipe smoker, with his pipe clenched between his teeth as all the Neptune action was in full swing, he didn't notice that pipe ashes had fallen out of his pipe onto his pants. With the Neptune shut down and lots of hard paddling back upstream to Wiscasset, he finally reached his take-out point.

As he got out of the Klepper he thought he smelled something. It then turned out that the whole front of his pants was one large burnt hole with still smoldering edges, to the amusement of the locals watching this chap disassemble his strange folding boat.

The moral of the story: Messing about in boats can get mighty adventurous...

Another story. Back in 1946 I had a Klepper foldboat and a BMW motorcycle. I wanted to take the Klepper out to Hohokus, New Jersey, to a friend's house and go paddling on lakes in the area. How do I get the Klepper to New Jersey? At that time I lived on West 69th Street in Manhattan.

I rigged up a trailer for the BMW using bicycle wheels, put the Klepper on the trailer, and drove off up Riverside Drive to the George Washington Bridge and across the bridge. There was very little traffic on the road or on the bridge in those days, so I had no problems. When I reached the toll booths on the Jersey side and wanted to pay my 25¢ toll for the motorcycle, the man in the toll-booth rang his alarm button.

The other toll takers all came out of their toll booths and came over to their colleague to see what the problem was. He pointed to the trailer on back of the motorcycle. There was no toll listed for motorcycle with trailer. What to do? What to charge? Meanwhile, all Jersey-bound traffic was stopped.

Finally one of the other toll takers said, "Geez, the trailer doesn't weigh much. Hey guys, let's just lift it over the counting strip." I slowly rode the BMW forward. They lifted the trailer over the counting strip. Problem solved. I paid my 25¢ toll for a motorcycle. Traffic resumed flowing and I drove to Hohokus, for a nice weekend of paddling.

I don't recall having the same problem on the return trip Sunday night. Maybe I passed under cover of darkness

Conbert (Connie) Benneck, Glastonbury, CT

Information of Interest...

All About *Lizzie G*

As chairman of the Maritime Heritage Program at Historic Spanish Point, the home-stead museum in Osprey, Florida, of the Gulf Coast Heritage Association, I would be remiss if I didn't correct a couple of substantial errors in the July 15, 2007 issue of *MAIB*. Namely, on p.9 the photo of *Lizzy G* (note spelling) identifies her as a Key West sharpie sailed by the Cortez Maritime Museum. Wrong, on three counts.

Lizzie G, so named for the wife of Pioneer Osprey boat builder Frank Guptill, is a modified version of a Cedar Key, Florida, sharpie built in the 1880s and described by Howard Chapelle in his seminal *American Small Sailing Craft*, pps. 124-5. Volunteer builders working under the tutelage of late master boat builder Stan Lowe of Sarasota, launched her in 2000 from a bamboo pole and Home Depot tarp shed on the shore of Little Sarasota Bay at Historic Spanish Point. We have progressed somewhat from those early days and now build and maintain our small fleet of wooden boats beneath a far better shed with, however, a dirt floor that occasionally admits (and drains) storm high tides.

Now, to *Lizzie G*'s modifications. Stan asked during construction if anyone minded if he deviated from the design to create a staved, rounded stern counter as he had never

built one. No one minded and as a result *Lizzie G*'s counter is round, making her, I think, more graceful. Alert readers will note that her mainsail (or foresail, as some insist) is not typical for the type and is more reminiscent of dory, garvey, and other designs documented by Chapelle. I honestly cannot remember, as one of the charter builders, how that evolved. I can testify that shipping the massive peak sprit is such a chore we call that timber "the Widow Maker." We routinely sail her in the configuration pictured in the Cedar Key report, which I call a cat schooner, but the spars can be shifted and indeed she'll sail quite handily with only a single spar in the third step, just forward of the cockpit. Finally, she was reduced in size to 23' LOA, 5' beam, and 9" draft, board up.

As to *Lizzie G*'s hailing port, it is Osprey, Florida. Her sponsor is Historic Spanish Point. In order, bow to stern, the folks sailing in the photo (in the article in the July 15, 2007, issue) are Diane Canniff, Charles Canniff (both of Anna Maria, Florida), and myself, hunkered down in my favorite position at the tiller. We brought her to Cedar Key from Historic Spanish Point for the annual Cedar Key small boat messabout, as we do almost every year.

The Florida Maritime Museum at Cortez is a separate institution with which we enjoy a friendly rivalry, the confusion between the two perhaps ensues from the fact that its director, Roger Allen, formerly was the master boat builder at Historic Spanish Point. He directed construction of the hull of the *Magic*, our first power boat of the pioneer period, a 1901 era launch that guided early tourists from Historic Spanish Point. She was completed by volunteers directed by master builder Bob Wenzel, following Roger's acceptance of a far more rewarding position at Cortez.

My corrections and background information in this letter imply no criticism whatever of author Ron Hoddinott's report. Our crew never beached on Atsena Otie Key and we stayed at different lodging with *Lizzie G* moored offshore, a fact as much my fault as anyone's. We simply were enjoying sailing *Lizzie G* under ideal conditions and, as Ron's photos reveal, there was scant space at the beach this year among the crowd of attendees.

Next year, I promise to be less aloof, should I be fortunate enough to accompany *Lizzie G*'s return to Cedar Key.

Allan Horton, Nokomis, FL

Gundalow Contact

In the letter about the Piscataqua Gundalow published on p.4 in the July '15 issue, the phone number to call for persons interested in learning more about the gundalow was omitted. It is (603) 433-9505.

Opinions...

SAR is Necessary

Regarding your July 1 "Commentary" on whether or not military and paramilitary search and rescue infrastructure should be squandered on the recreational crowd, I found the timing interesting. Last week I returned for a sailing trip that took me, a pal, and his 13-year-old son from Patchogue, New York, to Block Island via

the Fire Island Inlet. Contrary winds and a truncated schedule forced us to return under power via the Shinnecock Inlet. We blew a hose in Moriches Bay just after sundown. Dropping the hook in 5' of water, we had a temporary repair effected in about three hours. (The leak was on a 2" piece of hose buried deep in a semi-accessible area of the motor. Most of the time was spent finding it and then getting to it). Had we been on the outside, unable to anchor, in choppy seas, drifting into the breakers, it could have been a different story.

Then this morning I took my scull out for a short spin. Busted an oar right at the mouth of the Carmen's River. If I had been taking the boat across the bay (as I often do) I would have been mildly screwed, at minimum. I did fine on my own, but in different circumstances I could have wound up drifting down the middle of the bay with landfall unlikely for many miles.

So, having had two close calls under my belt in as many weeks, do I feel the need to have publicly funded rescue services at the ready, waiting for such instances to spring to my aid? I'm ambivalent. I don't consider coastal SAR as a dubious public investment. SAR has to be in place regardless for the fishermen and merchantmen whose livelihoods bring them into harm's way in order to enhance our collective existence. As some level of readiness must be maintained for the maritime trade, it might as well be made available to the recreational crowd who foot the bill for SAR anyway, at least in the aggregate sense. And the SAR folks can probably use the practice.

On the flip side, if worried about the expense, then there's little one can do except promulgate reasonable regulations that will keep people from putting themselves into harm's way. For instance, if every vessel sailing in coastal waters (and by this I mean the Atlantic Ocean proper) were required to have some sort of master's license, it would probably cut the annual amount spent on SAR for recreational boats in half. If we were to do something about the sub-humanoid cretins running around out there who shouldn't be permitted to operate any vessel with more than 2hp on it, it would also eliminate lots of public expense, especially the funds involved in pulling drunks and their victims out of the water.

But to do any of that requires a change in the status quo, an unlikely event in our calcified society, and a change that would most likely be resisted by the people who would benefit most from it, the small boat sailor, the rower, and the paddler. I, for one, am prepared to accept just about any sort of coercive regulation imposed on the power boating public if it would help me take my bay back from the barbarians who have destroyed it over the last 15 years, but many other people view any new laws (or enforcement of existing laws) as an unwelcome intrusion. So I am not enthusiastic about the possibility.

I think, at least for the near term, we are going to see the power boat bacteria colony continue in its spread over every square inch of our waterways and the commensurate increase in SAR effort and expense. The government will do nothing to reign in the irresponsible and we will have to wait for external factors (the price of fuel, economic collapse, etc.) to impose the regulations that our government is incapable of.

Brian Salzano, East Patchogue, NY

It is All About Me

Reference your Commentary, July 1, 2007, and your question about personal responsibility.

Over 50 years I have hiked, sailed, canoed, mostly alone, and was trained to take care of myself as nobody was going to be there if something went wrong. A part of the adventure is heading off knowing I am subject to my own devices. If an accident befalls me, I am out there doing life on my terms and I have no one to blame but myself. It has been All About Me (1950-2000), doing my own thing. It is about me taking responsibility for myself. There is great satisfaction in that.

On the news the other night there was a special news release. Some rescue stories had been published where the rescued were expected to pay for the rescue. There was concern people would not call for help when they needed it as they would be thinking about the cost. A lot of rescues would not be needed if people were properly equipped and trained. They bring it upon themselves and then expect others to fix it. "IT IS NOW OUR RIGHT TO A RESCUE, NO MATTER HOW ILL PREPARED WE WERE, AND IF WE DO NOT GET IT WE SUE." The gist of the news story was to tell people not to worry about rescue costs, it will be taken care of no matter what the policies of payment are.

It is All About Me (2007). Some people think they have the right to anything they want regardless of how it affects others. "Me first, if there is some left over for you, fine. I do not need to share or worry about the future of others." There are no consequences any more for lack of personal responsibility. "If my parents did not bring me up a certain way it is the responsibility of society to compensate me. The founding fathers of this country told me I have the right to freedom. The Founding Fathers left out a sentence: WITH FREEDOM COMES RESPONSIBILITY."

If one goes through life with the assumption there is a safety net for any oversight or errors made in this life, personal responsibility becomes a foreign concept.

Buckminster Fuller said, "The human animal learns by trial and error. Plan for mistakes. Let your children make some." Work your way into things so you do not need a major rescue.

A tradition of the sailor is to go to the aid of our fellow man. We do it without expectation of compensation. Some day we may need help ourselves. This is all noble when the participants have properly prepared themselves and did not go to sea with the idea that no matter how ill prepared they were, it is their right to a rescue.

If I am trained and prepared and something happens, I feel a rescue is appropriate and I have some financial responsibility. If I am untrained and ill prepared, I feel I should have full financial responsibility.

Gene Galipeau, Stanwood, WA

A Couple of Items

I always enjoy your magazine and look at it very soon after it arrives. A couple of items recently popped out at me on which I would like to comment.

In Ed Neals' letter in the June 15 issue: Having built an Optimist Pram, all the time swearing at the metric dimensions and their tight tolerances, I couldn't believe a "sail trainer for kids is easy to build." Then, going to CABBS website I noted that their plans "will not meet the measurement require-

ments for sanctioned racing competition under IOA."

In the July 1 issue reader Kerry Lange still doesn't have enough boats, although most are larger than mine. My fleet is made up of: Haven 12.5, cedar strip Ugo canoe, cedar strip Wee Lassie II, CLC Mill River 13 kayak, Sweet Dream canoe, Charlotte ultralight canoe, Old Town Discovery canoe, 8' sailing Dyer Dow, sailing Shellback dinghy, Optimist pram, strip-built grandfather's cradle boat, an old wood/canvas Old Town canoe, and a couple of 8' fiberglass dinghies. More boats than brains.

I was also very interested in the write-up on Mac McCarthy. I had very recently talked with an old high school friend who spent the winters in Mac's shop in Sarasota. I had the privilege of working under Mac at WoodenBoat School some years ago in building my Wee Lassie II and Ugo canoes. I believe one of those was the last year he taught there.

One more thing. I'm glad that "From the Journals of Constant Waterman" gets prime billing every issue as it's my prime read in every issue. Thanks,

Ken Weeks, W. Hartford, CT

Projects...

A One Sheet of Plywood Boat

Here is a boat project that some readers may be interested in. Inspired and motivated by the great layout of the Six Hour Canoe on a 4'x16' sheet of plywood, but living hundreds of miles from a 16' plywood supplier, and in need of a small, tough, lightweight boat that would be easy to get into and out of, that I could build in a few hours, I decided to build the One Sheet of Plywood Boat.

It's the biggest boat I could build out of one sheet of 8'x4'x $\frac{3}{16}$ " plywood that would look good. The boat is a dory of sorts, 7' long, 3' wide at the center line, with 9" sides at the center line with some flare and comes in at 39lbs. I put many extras into the boat so the weight could easily be reduced significantly.

It seems this boat would be great for kids to build. If enough readers are interested, I will get full size templates and plans together.

Bob Dalley, [Wavemasterboat@webtv.net](http://community.webtv.net/WaveMasterBoat/doc), <http://community.webtv.net/WaveMasterBoat/doc>



I would have bet money that there was no such thing as the Hunter Fleet left on earth. I would have supposed that such things disappeared no later than the 1970s. However, now I've seen with my own eyes the Hunter Fleet alive and well in Ludham, Norfolk, England. I'm talking about a place that builds and maintains a variety of classic wooden sailboats for visitors to rent for a few hours to a few weeks.

When planning a trip to England I knew I wanted to visit the Norfolk Broads, which I knew to be an inland waterway system and a longtime center of recreational boating activity. At first I expected to rent a small power boat, enough to accommodate four of us on a short picnic cruise, my wife and I, (Californians) and my daughter and son-in-law who reside in nearby Lincolnshire. I prefer sailing but I thought it would be more considerate of my non-sailing family and, besides, who sails in a river?

Knowing of my affinity for classic wooden boats, my daughter searched the internet for wooden sailboat rentals and came up with Hunter's Yard. <http://www.huntersyard.co.uk/index.html>. It seemed too good to be true but I reserved via email a day on a 20' "half-decker" (a daysailer with a bit of a fore-deck but no cabin) and started looking forward to my vacation even more than usual.

Some further background about the Norfolk Broads may be in order. It is an inland waterway system composed of several connected rivers and lakes on a marshy

The Hunter Fleet on the Norfolk Broads

By Kim Apel

plain on England's east coast. Centuries ago Dutch immigrants came across the English Channel, drained the marshes, and made fertile farmland in a region that the English had until then mostly ignored. The output of those farms was then traded via the inland waterways to the coast and beyond. What had been regarded as a wasteland became a prosperous region.

The Dutch legacy can be seen today in the ruins of windmills scattered around the countryside as well as a few restored for tourists. "The Broads" are also a UK National Park, the kind of place that the British go for family vacations rather than one that attracts many foreign tourists. For better or worse, all the amenities of what author Edward Abbey called "Industrial Tourism" (hotel resorts, B&Bs, boat rentals, shopping centers, etc.) are in abundant supply and summers are said to be crowded on the water and off. We were fortunate to be there in mid-May which is early season.

The term "broads" refers to several small lake-like bodies of water, broad places in a river, said to have been created by the riverside extraction of peat. Recreational boating has replaced the movement of peat and farm products over these waterways. In addition to

sailing on the broads, which one would expect, there is also sailing in the rivers. It's an odd sight to an American sailor to see substantial keelboats over 30' in length sailing in a winding river typically only about 200' wide and often less. Indeed, the Hunter Fleet thrives on a riverfront location, not a lake.

The Hunter Fleet has operated as a boat livery service since 1931. There are many such livery services scattered around the broads, offering all kinds of modern power boats up to 60' houseboat-like craft. Hunter's Yard is the only one offering locally designed and built traditional wooden sailboats. When leaving the modern vehicles in the parking lot and stepping first into the shop building and then on through to the docks on the other side, it is like stepping into the past. Once on the docks, one would be hard pressed to find anything not of the 1930s. Only an experienced eye and a close inspection of the boats would reveal synthetic sails and running rigging not of the period. Oh, and the plastic dock fenders, I suppose. Everything else is delightfully stuck in an earlier time.

The Hunter Fleet consists of 13 larger boats with cabins and two to four berths. There are also six smaller "half-deckers" intended for day sailing but these may be optionally set up for camp cruising. Most are vintage craft built in the 1930s. A few are recently built. A visitor like me can't tell the difference. In the shop was a new hull called *Lucent*, apparently complete and ready to be rigged and launched.



Buff Tip, our 20' half-decker.

Buff Tip's builder's plate.



My intrepid crew.

Boom and mainsheet detail on *Buff Tip*.



I'd reserved a lug-rigged 20-footer. In the course of completing the business arrangements and being shown the boat, I must have said or done something to inspire staff member Graham's confidence. With such precious boats, and what I knew of the safety and security obsession in British society, I expected some kind of intensive procedure for verifying my competence to take the boat out. I even volunteered that I would be the only experienced sailor aboard. Instead of rigorously testing my competency, Graham suggested that on such a light air day the lug-rigged boat that I'd reserved might be quite slow and wouldn't I like to upgrade to a peppier gunter sloop instead? I'd chosen the lugger precisely because I didn't have an experienced crew and now I found myself in a sloop. She was called *Buff Tip* and was very pretty.

The UK boating scene, like the US, is dominated by synthetic materials. Also like the US it has a resurgent community of wooden boat enthusiasts but it is still not enough for Hunter's Yard to survive on purely as a business venture. It is owned and operated by a charitable trust with an extensive organization of volunteers and supporters.

The Hunter's Yard docks are on a narrow artificial canal called "Womack Water," dug a quarter mile through the marsh from the main river channel. The staff helped us get away from the dock and, map in hand, we headed down the narrow stream flanked by tall reeds on both sides, barely wide enough for two boats to pass. I don't know

what one would do at this point if the wind were on the nose. Fortunately we were ghosting along on barely the hint of a favorable breeze as I got used to the boat. I couldn't tell if my passengers' silence was nervousness or a feeling of peace at the idyllic surroundings and complete ease and confidence in my abilities.

We reached the main channel and turned to starboard, upstream as far as we could tell by the map. There's not enough current to judge otherwise. Suddenly we were in traffic and going to windward, tacking between reed-lined riverbanks. Thankfully the power-boats seemed to understand, or at least accept, our erratic course. They slowed down and gave us space to tack. Theoretically all the Broads waterways are a 5mph no-wake zone. It's imperfectly observed but still far better than the speed havoc I routinely witness on my home waters.

Though the *The Wind In The Willows* of "messing about in boats" fame is set on the upper Thames River and not in Norfolk, I would suppose that the Broads offers a similar timeless atmosphere, familiar and otherworldly at the same time. As if sailing a gleaming, varnished mahogany "halfdecker" in a narrow river wasn't exotic enough to my American mindset, then there were the windmills and the ruins of a medieval abbey on the shoreline. "Toto, I think we're not in Kansas anymore."

Buff Tip and all of Hunter's rental fleet have fixed ballast keels, albeit a shallow

"shoal keel." You would expect that sailing in a river in a keelboat would mean the constant risk of going aground, but it was not so. Indeed, when the wind demanded frequent tacking to make progress in a narrow channel, we were able use the full width of the river. We sailed right to the margin of the reed-lined banks, close enough to reach out and touch the reeds if we chose. Our sailors' training tells us to avoid the shoreline to avoid having the boat strike something hard. But along most of the shoreline there was nothing hard to strike. The water depth was sufficient. If one sailed into the bank (slowly, at least) the reeds would simply absorb the force harmlessly like a giant soft net. Indeed, we observed a solo sailor aboard his beautiful 30' traditional cutter drive his bow into the reeds, apparently a standard Broads technique, and let it hang there for a few minutes while he dropped sail and made some kind of adjustment. Then he backed out and sailed away.

In addition to the Hunter Fleet we saw a number of other fine wooden power and sail craft cruising on the river or berthed alongside. Overall, however, wood boats and sailboats are a small minority. Fiberglass cruisers dominate. Hundreds are available for hire in the Broads and hundreds more are privately owned and berthed in side channels. On the day we sailed (a weekday in May) we had a fair amount of company on the river but it was still very enjoyable. By July and August, however, I understand that boat traffic can be intense.



Hunters Yard.

An unnamed dinghy at Hunters Yard.



One of the larger boats in the Hunter fleet.

New build in the shop at Hunters Yard.





Summer traffic as pictured on the Hunters Yard calendar.

A typical Broads motor cruiser by a restored old Dutch windmill of long ago.



The breeze was light and fluky but enough to keep us moving, mostly. After a few pleasant hours we decided it might be wise to turn around in case the wind quit completely. None of the Hunter Fleet has auxiliary power, unless one counts oars. I'm OK with rowing, up to a point, but if sometimes good judgment can avoid it, I say why not? And then the wind did quit, for a few minutes at least. Fortunately it was merely the lull while the breeze clocked in a new direction and returned, this time with gusto.

The good news was that we were really moving now. The bad news was that we were in the narrowest part of the river that we had seen all day and the way back was upwind (again). We were suddenly short-tacking and having to put all our crew weight in the right place at the right time. I hadn't prepared my crew for this challenge while conditions were sedate. Some of the crew were taken aback at the phenomenon of a boat heeling as it goes to windward in a good breeze. The previous several hours had not required any such thing and now they doubted whether I had things under control. Apart for my concern for their delicate feelings, I was having a fabulous time.

We turned a bend in the river and took off on a broad reach. The crew was relieved to be sailing flat but now I was nervous because of our increased velocity. At this rate it might only take a few seconds of inattention to get into some trouble, with other boats and the shoreline so close. Nevertheless we made it back to Hunter's Yard without incident, and despite the breeze I brought *Buff Tip* into the dock as gently and controlled as can be. Some of the crew debarked immediately for the car. I was a happy guy and lingered to stow the sails and lines and re-rig the cockpit cover, even though guests may typically be excused from these chores. It was a very good day.

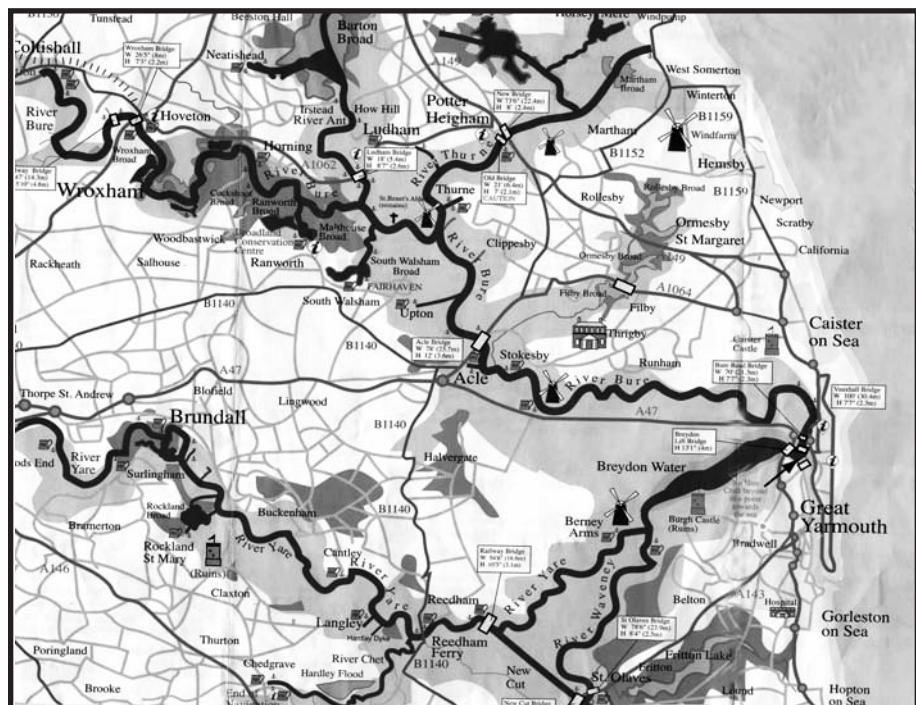
Of course, it's a long way for an American to go, no matter how rare and special a sailing experience it is. And one will get hammered by the current unfavorable currency exchange rate. But if you do ever happen to visit England and are wondering how you might try an authentic local sailing experience, I recommend the Norfolk Broads and the Hunter Fleet.

Left, top two photos:

A fine clinker dinghy.

One of several fine larger sailboats we met on the river.

Map showing only a portion of the Broads with Hunter's Yard near Ludham in top center.



Saturday, June 2, was the day for our 2007 journey to Tully Lake. I arrived at the launching site and was joined by Lou and Tom. Tom and Lou brought the Moose Hauler, also known as a 20' Guide model by Old Town that Lou recently rehabbed in his Lincoln shop. I brought my 16' foot red trip canoe that has been giving good service this year.

We launched at 9am as the overcast gave way to hot, hazy sunshine that stayed with us throughout the day, even though the forecast was for "chance of showers." Once again this proves that no matter what the forecasters say, the best thing to do is just go out there and make the most of it. Summer is too short to cancel activities based on the possibility of rain during the day.

Paddling upstream on the Tully River, located in northern Worcester County, Massachusetts, we had the area to ourselves and the wildlife. We saw a muskrat and a beaver along the way along with dozens of painted turtles and more birds than we could name. Among those that I could identify were the great blue herons, red tail hawks, goldfinches, red winged blackbirds, mallard and black ducks, and two turkey vultures roosting just off the river.

Soon we entered Long Pond and paddled its length, looking for the elusive spot where the East Branch of the Tully River enters the pond. It is in a marshy area and it seems that the river route changes every year. As usual, once we found the opening in the marsh where the water flowed in the river opened up into a fairly wide stream which we started exploring to see how far we could proceed upstream before returning at a reasonable time. I thought a practical turn around point would be where the power lines cross over the river.



The East Branch of the Tully River.

Tom and Lou gliding upstream in the Moose Hauler, 20' of classic Old Town canoe.



Trip Report

Tully Lake, Long Pond and the East Branch of the Tully River

By: Steve Lapey

Photos by Tom Ballantyne, Steve Lapey,
and Lou Mutschler

While crossing one beaver dam (there were several) Lou came upon an unusual sight, a flock of butterflies in a cluster on the ground, apparently feeding on something. The flock, if that is the correct word for a herd of butterflies, consisted of at least 25 bright yellow butterflies, each one about 4" across with black tiger stripes on the wings. Our field guide identified them as eastern tiger swallowtails and they are common to southern New England. What was it that they were attracted to? It was a pile of black bear scat, full of berry seeds that caught their fancy.

After clambering and pushing over a half dozen or more beaver dams we found ourselves at the powerline crossing and did the turn around for the quick return trip to Long Pond. For this portion of the trip Tom paddled in my red trip canoe and I joined Lou in the Moose Hauler. The big 20-footer really paddles beautifully, its hull speed is quite a bit higher than any 16' canoe so we were just paddling gently while Tom was working pretty hard to keep up in my little red canoe. In addition to being quick it is about as stable as any canoe ever made. The

only drawback that I noticed, and it was minor, is when coming to a turn in the river the stern man needed to plan ahead, this big boat had to be pushed into a turn well ahead of time.

Soon we were back in Long Pond where we rested up and had lunch along the shore, across from where Spirit Falls was tumbling down Jacob's Hill to spill into the pond. Later in the season the falls will dry up altogether. After lunch we continued down the river, this time with Lou in the red canoe and Tom and I in the big Old Town for the trip back to the canoe launch at Doane's Hill Road. The canoes were loaded up and we were off, looking forward to our next adventure, Father's Day on the Sudbury and Concord Rivers.



Lunch stop at the Long Pond campsite.



A flock of eastern tiger swallowtails along the Tully River.

Lou test paddling my little red trip canoe.



Maybe it's that long ago Boy Scout training. Maybe it's terminal do-good-erism. Maybe it's something I learned in Sunday school. Maybe it's just the right thing to do. But maybe it isn't. Why? Well, the rest of the world can't be wrong all the time. Can they?

What am I raving about? I'll tell you what I'm raving about. It's the number of times in a year that I manage to come home with somebody else's boat following me at the end of a rope. Happens all the time. I mean, all the time. Could be a jet ski out of gas. Could be a capsized sailing dink. Could be one of those curvaceous and tall and droop-snouted "express cruisers" with a young family aboard. It could be you! I'm an equal opportunity Boy Scout. You get into trouble, run out of gas, drift for the shoals, even get stuck in the mud right in front of the "Danger Shoal" sign, seems like I'm your guy.

No, I don't see anything particularly annoying or difficult about that. No. When it comes to making mistakes on or off the water, I am an expert. I've been aground. I've caught fire. I've fouled my anchor and been drifting toward a hard spot. It happens to the best of us (and to me, too). So what's the big rant all about? People need help. So, people help. Right? No, they don't seem to, all that much.

I live and sail in a place where there are two major franchise towing outfits listening 24/7 to the plaintive cry of "Mayday, Mayday." We have a genuine US Coast Guard station with a waterfront location, complete with helos, boats, and ships. We have a gob of municipal lifeguard stations, some with those new-fangled two-way radios stashed someplace between the straw hats and the zinc oxide nose creme.

And, of course, we even have our local Harbor Police (don't you dare call 'em harbor patrol if you want 'em to answer you) available to run those boats at or near red line from one end of the bay to the other. I hear it's the Harbor Police who have been tasked with completing a major study on wave propagation theory as it applies to the resonating of oscillating fluids within restricted wave fetch environments *vís-a-vís* small muscle-powered buoyant vehicles. I could be mistaken though. All these people with badges and new big-bore four-strokes get paid to help people when people need help. Right?

Yes, I'm absolutely certain that they get paid. Well, the local Coast Guard Auxiliary does it just for the pure thrill of wearing those stylish bright orange life jackets and natty blue uniforms with long sleeves and long pants around here in the summer. But other than the fashionistas with the cool banner strung across their flybridges, all these people standing by their radios, anxiously parsing every static filled syllable flung across the airwaves on Channel 16 certainly receive some sort of direct deposit from some sort of tax-supported bank account.

But there is a bit more to this than the fact that THEY are the professionals and I am the amateur. And that has the ring of truth. Fact is, I not only don't get paid, I don't often even get thanked. But I think that's for a sociologically discreet variable that I will bring to statistical significance in a moment. Nope, they're the professionals. But.

From what I watch, and listen to on the radio, and read in the newspaper on a daily basis, I'm pretty sure the Coasties are way better set up to prevail in apparently one-boat speed contests. Although to be perfectly hon-

So, What're You Gonna Do?

By Dan Rogers

est, those boys do have the honor and necessity to test the speed and dexterity of various naval security boats showing the flag and M-60s around this here hotbed of terrorist kayaking cells. At any event, those boys and girls out testing the high speed stamina of Mr. Yamaha's creations would most always rather criss-cross San Diego Bay in constant pursuit of Al Queda operatives concealed in the hold of a Sabot than, say, pluck a couple of scared and cold kids from the upturned bottom of one. Could be that after everything is said and (nothing is) done, it boils down to a jurisdictional issue. Well, just give it a try sometime.

Yell "HELP, HELP ME PLEEEZZEE!!!" into any ol' VHF microphone lying around. Even if you give your boat's name, and spell out your current address down to the last wave and ripple, the voice on the other end is going to ask you if you are in danger and what your boat's name is. Then they'll ask you for your location. And after you get done with all that they will ask you if there is anybody they can call to come and help you. Now that's people helping people! I'm not one to badmouth the Guardian Service. They do real, dangerous, necessary, good work. It's just that their mission profile doesn't seem to fit most of the things people call 'em for. It's not their fault.

So, who was next? The lifeguard services. Those boys and girls pull tourists from Tulsa and California mall-bred debutantes from La Jolla out of the surf all the time. They'll rescue most anybody. They even rescue the occasional dufus who crawls past the "do not enter" signs and promptly gets swallowed by one of our infamous rip tide tsunami undertow ebb current shore breaks. Yep. Happens all the time.

That is, except for the time I escorted (and sailed by radio control, "now, see that big rope tied to the big sail over your head? Pull on it and push that stick in front of you. Yeah, the one swinging wildly from side to side... All the way over to the LEFT side of the boat... yeah, the LEFT side when you are facing the pointy end. OK, now, what does that fish-eyed thing in the wall in front of you say? OK, push the stick the other way, until the numbers get to 90 and then put the stick in the middle of the part where you have your feet... yeah, where you just puked. Try not to slip around on it too much," radio control) a gang of scared women and one boy into the jetty mouth from the clutches of an unpredicted gale.

Yep, the lifeguards were there in their fancy red boat. They were right there, just inside the entrance, ready to pick up the survivors if one of our underpowered sailboats had gotten just a bit off center as they surfed on in. But I do, in fact, want to thank the lifeguards. They were just about the ONLY jurisdiction that would even answer me when I called for back-up that day.

Who's next? The towing services, those seagoing Triple-A guys are out there all the time. They have paid professional operators standing by. They have high sites so they can hear the hapless power boater dejectedly declaring an Out of Beer Emergency. They

do have a mercilessly good time getting some of their more gullible clients to explain in front of God and everybody on Channel 68 just how they could be so boneheaded as to actually leave for someplace over 100 miles over the horizon and now be out of gas within sight of where they started out from.

And they seem to get, and respond to, an atrocious number of sailboats that can't seem to get back home due to ENGINE trouble. But that's the topic of another rant, someday. They will even bring a gallon of King Faisal's Hi Test out to that SkiDoo drifting around a mile from the launching ramp. For a non-member that could work out to several dollars per cc. But they'll come. If you can call 'em. And I do hear the passing boater who will deign to pass a VHF call to the towing operator, relaying a call for something like this. Maybe it IS me who doesn't get it. Maybe there IS a good reason they don't just throw the guy a line and pull him to where he needs to get home to. Maybe there is.

Just last summer. Here in San Diego just ask the average boat owner from Phoenix. Summer comes to a slamming, grinding halt on Labor Day weekend. After that most folks hereabouts just cuddle up by a roaring fire. Well, in a way that's true. Our fire season is in full swing most anyplace there is a brush covered hill left unburnt for a year or two. But "boating season" seems to officially get over with when the 300-mile bumper to bumper commute home across the mountains and deserts begins on Monday afternoon. Maybe nobody with a California driver's license actually owns a boat they keep in San Diego. Maybe.

As I was saying, just last summer I found myself on a non-operational small motor vessel, drifting about with the embarrassed owner, my young granddaughter, and his younger daughter. Yes, we were drifting with a motor even the Boy Genius couldn't start that suddenly would not pop. We had been off to a local variant of Adventure Island for a bit of wading and sand excavating. No, we didn't have food. No, we didn't have water. No, we didn't have my normal dose of good sense and take any spares. No, we didn't even have a decent anchor or a paddle.

Yep. We were drifting in the middle of the biggest part of south San Diego Bay on Sunday afternoon of Labor Day weekend. Boats buzzing about EVERYWHERE. First we waited patiently, assuming that somebody would come along in a minute or so. After the first hunter-killer pack of jet skis zipped by so close that they splashed water into our boat we figured a more forceful wave for help was in order. Nothing happened. When I tried the traditional stand up in the bow with a shirt wig-wagged over my head we did, in fact, attract the attention of two separate family units out water skiing.

Yep, they both reluctantly came over to answer our calls for help. No, neither could help us. Seems they were busy. I'm not making this up. No, we didn't die. My very good friend, Cliff, responded to my cell phone call and made the 5kt passage out in his sailboat and towed us home. Thanks, Cliff. There's sort of a kicker to this episode though.

Later that evening the marina security guy came over to our house and asked me if I could go see what might help a visiting 30-footer that suddenly could not get their engine to turn over. Sure, you need something, just go ask Dan. I really don't mind helping if I can. But that's pretty much the

deal hereabouts. They were out of a marina about five miles across the bay. And since several of us were going to be anchoring out up that way later, I would have done it anyway. I just took 'em in tow, dragged the 30-footer home, and poked them into their slip, tugboat style.

It's not a big deal. But please understand that my 6,000lb sailboat is powered by an 8hp, two-stroke Nissan long shaft. There are not a whole lot of extra ponies available to drag a trailer. But the good part? As we were taking this wagon train out of the marina and past the jetty, who should pass us, dragging an enormous wake into the basin, of course, but one of the two ski boats that was too busy to help us earlier in the day. God does in fact look out for do-gooders. And hopefully he embarrasses the don't-gooders who seem to be too busy to stop. Well, he might.

I probably don't need to detail the interface of Homeland Security boats (with FOUR 250hp outboard motors on the tail of their Don Johnson-mobile), and the Immigration Service boats, and the Border Patrol boats, and the Customs boats, and the... well, it would begin to look like all those guys did was show the Coast Guard how much faster THEIR hardware is. And far be it from me to stoop that low to make my point.

This past weekend I was headed out for late afternoon run up the bay to the farther away of the only two legal anchorages allowed for San Diego boats to spend the night. Cliff and his wife Sheryl were in company aboard their also 26' and also 30-year-old sailboat. It was late afternoon and the homebound traffic in the channel was picking up. I'm pretty certain that most of the boats around here would turn into pumpkins or something if they actually were caught out after dark.

So anyway, there is a pretty steady stream of traffic running like lemmings toward the marina on toward sundown. We tend to sail out of the posted channel whenever possible and that day allowed a pretty free run. I did see an about a 25' express cruiser anchored in the fairway. It's not totally unusual for people to do that, but with all that homebound horsepower ripping past them on both sides, I kinda figured they were not out there for the solitude. We sailboats were beating into the tail of a passing front and had to slog it for another mile or so to get close enough to see what the deal was. I think I almost got run over by a boat (fleeing the vampires, perhaps) that came flying around the dogleg.

Yes, they were broke down. Yes, they could use a tow. Yes, they would leave the anchor down until I got the sails down and

motor running. Yes, they were still rocking in the passing wakes when I got back alongside and heaved a towline. I admit that boat was heavier than I figured. *Plum Duff* could make just under 3kts with the screw flailing full tilt. As we cut the corners, running across the flats mostly to avoid all the more impo'tant folks that just had to get past us in the narrow channel, I put the sails back up and got us up another knot or so. Yes, I towed them in to the marina. Yes, I slingshotted them into a slip. Yes, it went pretty much as the paid professionals would have done with 50 times the horsepower and probably a bill for a couple C-notes. No, they didn't even look up, or smile, or even wave as I took in my 100' tow line and headed back for that overnight anchorage.

Mostly what I do tell people who actually recognize that they benefited from a ride home, or such, is like the theme of that country western song where the dogooder says, "No, you don't have to pay me. I'll have pay enough, if you help somebody else."

But do you suppose that, apparently, almost everybody else is right except for Cliff and Sheryl, because they tow people home, too, and we're just supposed to leave it for the professionals? Naw.

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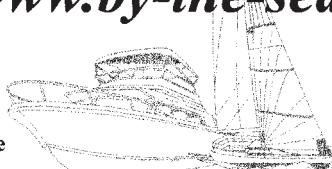
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What the world needs is a truly economical planing hull power boat. I'm the designer of Tolman skiffs, built of stitch-and-glue plywood, which are economical compared to other boats in their class due to their relative light weight, but the sad fact is an 18-wheeler running down the highway fully loaded gets better mileage than I can get in my 22'x8' Jumbo skiff. A Diesel engine would doubtless make it more efficient, but Diesels are not commonly made as outboards and the usual ways to install them are as outdrives (inboard/outboards) which are very expensive to buy and to maintain, or with conventional straight shaft-and-rudders which result in boats that are deep draft and difficult to trailer because of a keel or other appendages. Neither drive system appeals to me.

Enter the Seabright skiff. This traditional boat was developed by many different builders for fishermen along the New Jersey shore that had to launch over beach due to the scarcity of harbors in the early 1900s.

A Boat From Yesterday For Tomorrow

By Renn Tolman

These skiffs used conventional inboard engines (gas in those days) with straight shafts and rudders, but what made them special was the prop, running in a tunnel which, along with the rudder, was placed entirely above the bottom of the hull. Thus these skiffs drew no more water than the hull itself, which because of its flat bottom was often only inches.

The peculiar shape of the stern, with its pod-shaped underbody and cutaway transom, gave these boats a good turn of speed, several times that of displacement-type boats of equal power (think sailboats), yet they were

more efficient than conventional planing hulls (like Tolman skiffs, for example).

Perhaps the most famous modern version of a Seabright skiff was made by Robb White of Thomasville, Georgia, for use in the shallow waters of the Florida Panhandle about five years ago (see his article in *WoodenBoat* magazine, March/April 2006, and many articles in this publication). His so-called Rescue Minor (the name refers to a Seabright skiff designed by naval architect William Atkin in 1942) drawing only 6" and powered with an 18hp Kubota diesel, achieved more than 20mph and 20 mpg. It should be pointed out each of these numbers drops to less than 20 when the skiff is loaded with more than just the operator.

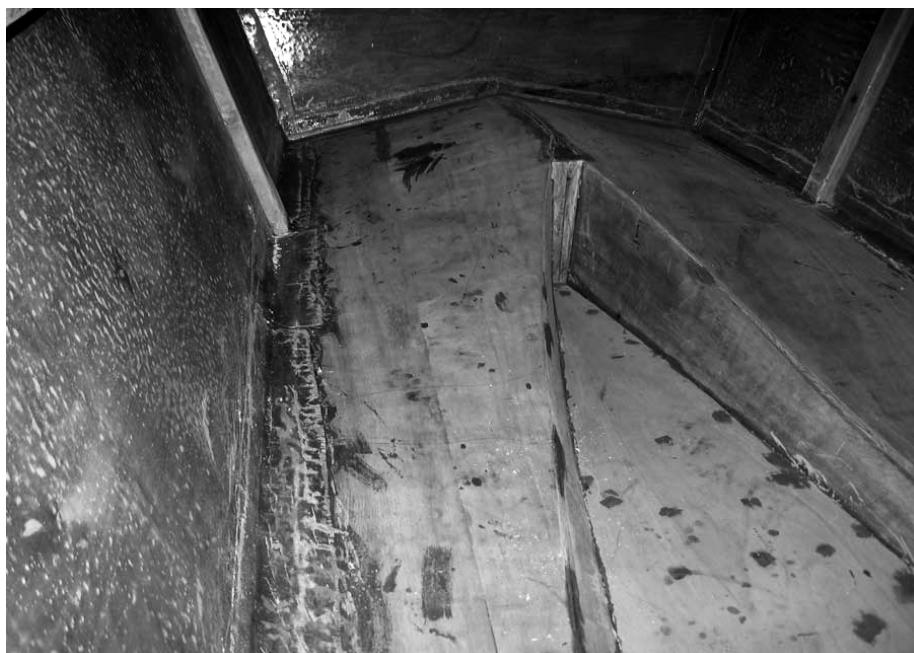
Although the design plays a large role in his skiff's super efficiency, doubtless its extremely light weight also is an important factor. Robb built his skiff like a strip-built canoe out of poplar wood cut on his own land. Furthermore, his skiff had very low sides, saving more weight. His engine installation, which he built himself, employed a belt-drive system derived from a garden tiller that eliminated the conventional clutch and reverse gear, yet a further weight saving.

One would have to judge Robb's effort an extremely successful boat, but the freeboard, while adequate for his needs, is too low for most of us to feel comfortable in. Furthermore, his act is a hard one to follow for those of us who want to buy our mechanical parts off the shelf and want to build in plywood. Still, it gave me an idea.

What I have done is to take the traditional Seabright skiff underbody and graft it on, so to speak, to my Standard Tolman skiff design to give it more freeboard and interior volume. In the process I lengthened the Standard skiff from 20' to 22' but diminished the beam from 7' to 6'6" to reflect the proportions of traditional Seabright skiffs, which were relatively long and slender. In the process I think I have improved the bow by eliminating the hard knuckle of the original Seabright skiffs, which tends to make such boats yaw (bow steer) in a following sea. In other words, the bow looks much like that of a typical Tolman skiff, and we know these handle well.

The bottom is flat, not veed, and although I have railed against flat bottoms in the past, the Seabright skiff has a feature which is said to mitigate pounding. The aft end of the tunnel has a slight downward curve which deflects the water coming from the prop with the effect of forcing the bow down. Thus the hull punches through the seas, rather than rising over them and slamming down. (Robb White verified that this principle works.) This bow-down aspect can generate spray but I have included the usual double sets of spray rails that are so effective on the Standard Tolman skiff.

Twenty to 25hp engines are appropriate for this skiff. I intend to power my prototype with a 20hp Yanmar Diesel with a conventional clutch and reversing gear. I bought a used engine and gear but I had to buy a new gear which has a 1:1 ratio rather than using the stock 2:1 reduction gear which is designed to push displacement hulls. The Seabright tunnel permits only a small diameter prop which must be run fast to get planing performance. This is an off-the-shelf item, however, and not too expensive. I expect to cruise at 17mph. Economy will be outstanding as this engine burns 5/8gph at about 1,900 rpm.



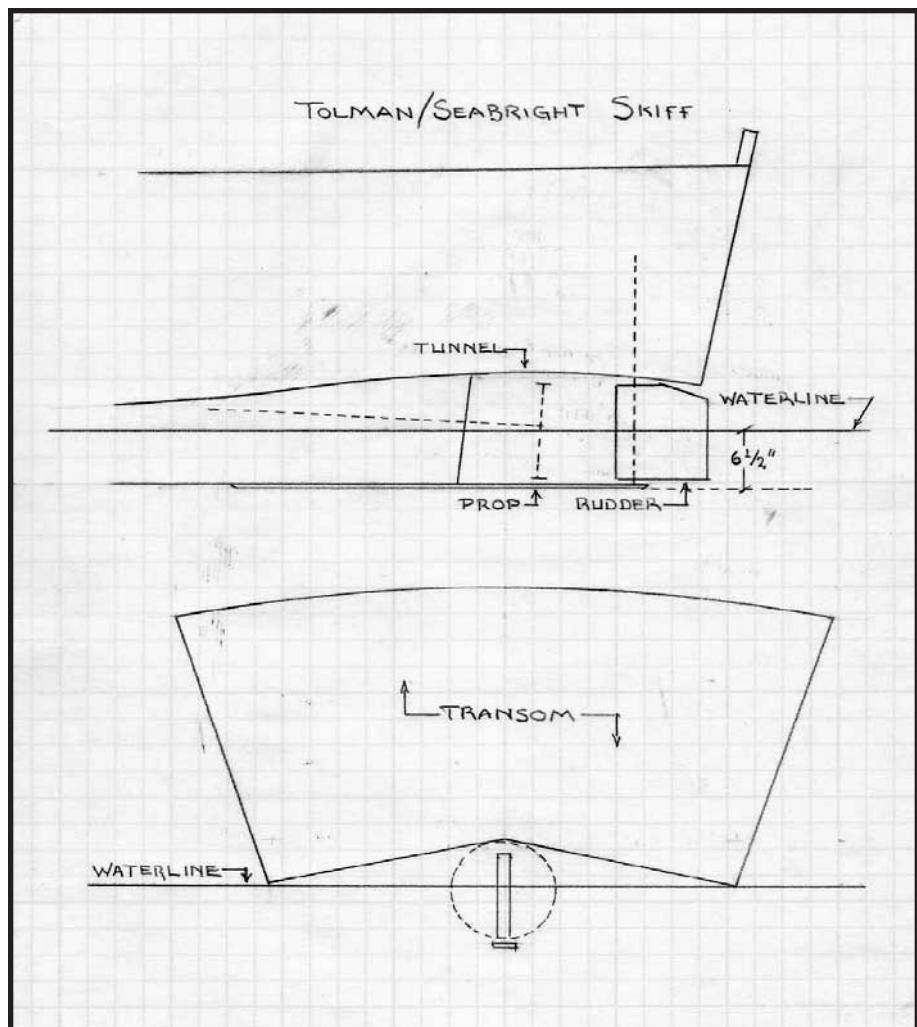
A Diesel setup like mine, if new, is about double the cost of an outboard of comparable power and thus has a long payback given the amount of hours the average boater drives per year. There may be other choices. Diesels made in China are significantly cheaper. To my knowledge these are not yet marinized, but it's perfectly possible to do this, as Robb White did with his Kubota, or have it done. Basically, the exhaust manifold must be liquid cooled. Air-cooled gas engines are cheap although noisy. Diesel or gas automotive engines are a possibility. Making a belt drive system like Robb's would also save money and weight.

It might even be possible to run a Seabright with an outboard in a well, although there is a problem with this. When the skiff is at rest the water pickup ports on the engine are above the waterline. My solution would be to mount the engine on what is known as a jack plate, a stock item used on bass boats. This fits between the engine and the transom and operates electrically/hydraulically to raise and lower the engine. This is a wonderful feature on any shallow water skiff, by the way.

The engine would be lowered 4" or so, starting off to immerse the water intakes, then raised getting underway as the tunnel fills. In the running position the lower unit of the outboard (and here I'm thinking of a 25hp Honda) is completely shielded by the hull and in this position the ventilation plate on the outboard would be snug against the roof of the tunnel. Steering would be with a separate rudder, the same as with an inboard installation.

I think fuel savings alone aren't necessarily the Seabright/Tolman's biggest advantage. There's a lot of thin water in Alaska, tidal flats and rivers, and a skiff that draws only 6" or 7" with full protection for the prop has a tremendous attraction for a hunter and fisherman like me. And as a lot of boaters know, there are a lot of other places on earth with shallow water as well. So maybe the Seabright skiff's time has come, again.

Plans for the Tolman/Seabright are available in the form of a 25-page pamphlet (11



sheets of drawings which include directions for installing an inboard engine and building the rudder) to be used along with my book, *Tolman Alaskan Skiffs*, since construction of most of the T/S is similar to my Standard

Tolman skiff. The price is \$30 plus \$5 for Priority Mail (\$10 for Global Priority to areas outside the US). My book, which includes plans for three skiff designs, is described on my web site, www.alaska.net/~tolman/skiffs.

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Ready for tape.

Keel added.



An Imperfect Compromise

Part I

By Malcolm Fifer

There has been mention made recently in this magazine about the Perfect Boat. Perfect for what? Ocean racing, moving coal, rum running, taking mother-in-law on a picnic? Every boat is a compromise and I made several when designing my recent rowing boat. I list them below and explain my thinking.

Double ended or not? The only reason to have a transom is to hang an outboard or a rudder, and I may want to do this someday, but a rowing boat without a rudder should have as fine a stern as the entry section at the bow. The long straight aft sections of a planing boat enable it to do just that, not needed here. There are benefits in being able to go backwards or forwards relating to the position of thwarts for one or two rowers and weight distribution of passengers, so on balance I chose double ended.

Length? It needs to be very short so that it is light (less displacement = less wetted area) but it needs to be very long as speed and length are related (Google [boat speed length relationship] for more). I settled on a waterline length of 13' ($1.34 \times \sqrt{13} = 4.8$ knots) and an overall length of 19' (2.5 sheets of marine ply).

Beam and midsection? The best shape would be a box 8' wide (high stability) which would allow me to use 16' oars (high power) but think of the weight (displacement goes up) and think of the wetted area (awful). So how about a 2' wide cylinder (now that would fly) but then I could only use 3' oars (moving like a bee's wings) or outriggers but the boat would be just as happy inverted as right way up (not good). So I settled on 5' beam and a semi-elliptical mid-section (or a double chine approximation). This gives me adequate stability, reasonable displacement (weight), and I can comfortably use 7' oars.

Single or double chine? The single is certainly less work to build (three seams not five) but either the displacement would go up or the stability would go down. Think about it! And double sure looks better (think of the neighbors).

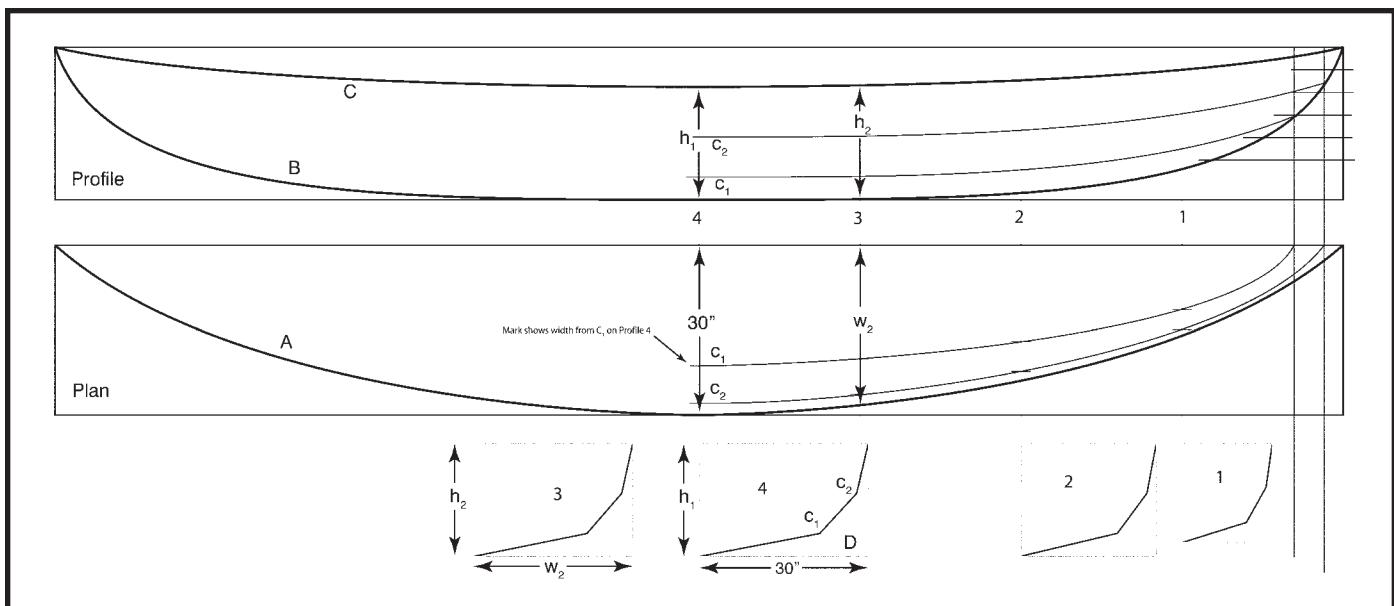
Freeboard? As I am not going to sea I can keep the freeboard low (helps with displacement and oar angle) so I settled on 16".

Draft? I built her with $\frac{1}{4}$ " marine ply using tack and tape so the final weight ended up at 158lbs + 1 rower 220lbs = 380lbs (6.1 cu ft). This gave her a draft of 4" (+ keel) making her easy to row as less water is displaced (moved aside).

Launch day. The initial trial might have been a success if there were not a strong wind blowing that day. I should explain that if the wind blew like that more than three days a year in Alabama I would be sailing, not rowing. I discovered that with such a dish-like underwater shape and only drawing 4" the wind moved her sideways better than my oars moved her forwards. Fortunately there were no onlookers to relish my embarrassment. Stage two involved adding a 3"x8' keel. She now runs like Thomas the Tank Engine and I am very pleased with her performance.

If any reader would like a copy of the offsets I will be happy to send an Excel file. Or if you would like to use the moulds they are free if you pick them up. Email me msfifer@bellsouth.net

In Part II I will explain how I used Adobe Illustrator to draw the sections and to loft the design.



Pull.



Rest.



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We were five guys out to scratch our collective itch for a spring camp cruise with friends. The destination was Lake Mohave (mo-HAH-vee), one of the chain of reservoirs of the Colorado River between Nevada, Arizona, and California. It's in the Mojave Desert but the lake is spelled Mohave, who knows why. Lake Mohave is somewhat less overrun by noxious speedboats than Lake Mead upstream or Lake Havasu downstream. Though it was nominally "spring break" season and the weather would be near perfect, we calculated that "final four" weekend of the NCAA basketball tournament would keep some of the speed-and-noise mongers off the water. We also had a special mission to fulfill, to re-launch an old sailboat that had been off the water a long time.

Gorden, Tom, and I were in Tom's 18'x5'2" V-bottom sloop, designed in 1950 by Tom's father-in-law, Joe Dobler, and built about 1952. Joe called his design #114 a "Camping Cruiser," surely one of the first of that now common genre. Joe was an aeronautical engineer by day and a small boat designer on his own time from the 1930s to the 1960s and then continued to design boats for oar, power, and sail well into his retirement.

Following the development in 1963 of "stitch-and-tape" plywood construction in the UK, Joe introduced it to the US and marketed plans for many "stitch-and-tape" designs. Joe's #114, however, preceded that innovation by over ten years. It was built conventionally of plywood on spruce frames and chine logs. It's unknown whether other #114 skiffs were ever built, but it's very likely that this is the only one still in existence. Prior to our Lake Mohave outing #114 hadn't been in the water in over ten years and perhaps only a few times in the last 30 years. So the re-launching was a significant day for Tom, for the boat, and perhaps for Joe, who "crossed the bar" in 1997.

Jeff and Sabin were in Jeff's DY-18 "Myst" yawl designed by Don Kurylko and built by Jeff. Jeff's yawl is a 21st century boat that looks like it comes from the 19th century. Conversely, #114, designed and built in the mid-20th century, sought then to look and perform as a "modern" design and it still does. Only a few details hint that it's not a current design. Its rudder and dagger board have the "swept back" look typical of the time vs. the more vertical profile favored these days. There are few blocks and no cam

Tom Setum and the Dobler #114 camp-cruiser.



A Joe Dobler Skiff Returns

By Kim Apel

cleats, a sailboat for manly men, arrrggh.

I tried for years to persuade Tom to get this boat back in the water. Tom owns three Dobler-designed and built small boats inherited from his father-in-law. He's launched and used two, so it's taken awhile to finally launch the third. About three years ago I got him to repaint the outside of the hull by offering tools and my help. Then a year ago, with similar incentive, we repainted the interior. Finally we set a goal to take her camp cruising at Lake Mohave. She hadn't been used in so long that we needed a "dry run" to rig the boat for oar, power, and sail, just sitting on the trailer to see if all the parts were there and in working order. It was a bit like assembling a puzzle, unsure of whether all the pieces are at hand. With some adjustments, improvisations, and adding a few bits of hardware she was seemingly complete and ready for a road trip and cruise.

After a five-hour drive from the southern California megalopolis, we rendezvoused at the Cottonwood Cove marina late on a Thursday afternoon in March. Our plan had been to launch promptly and let the "assumed" prevailing southerly breeze push us easily downwind to our intended shoreline camp three miles away. You know what they say about "assume," it makes an... never mind. I should know by now that spring weather is fickle in the desert, it mocks my weak human schemes. So instead of a southerly breeze we found it was blowing hard from the north. In consideration of the upwind destination, the impending dusk, and our untested craft, we spent the first night on asphalt in the adjacent National Park Service campground instead of on a remote, pristine beach. No matter, the food and the company were fine indeed.

Friday we launched into less of a headwind, but not much. Jeff and Sabin set off to windward. Gorden, Tom, and I followed, concerned about subjecting our vintage craft to such a sudden, strenuous workout after her years of inactivity. Who knows what decay may lurk in the heart of an inactive 55-year-old boat? With her fresh paint she looked

The Myst setup for camping.



strong enough but the chance of the mast breaking, or the forestay parting, or the dagger board trunk splitting open seemed quite possible. We wore our PFDs and secured our pile of camping gear, precautions we don't necessarily observe when we're feeling confident. She behaved quite well, however, in the gusty and challenging conditions and after an hour or so of windward work we were relaxed and very pleased with our boat.

It was gratifying to have #114 back on the water after so long. It's considerably roomier and more stable than my boats (sailing dory and canoes) so the comfort factor was outstanding by the standard of my wet and bruising boats. Consistent with its utilitarian flavor, #114's sail area (135sf) was sufficient to keep us moving well but less powerful and therefore less demanding than that on one-design classes of comparable size (e.g., Thistle, Lightning). The breeze later moderated to just right. Few other boats were around. It was turning into a perfect day.

We had all been camp cruising at Lake Mohave before. Part of the Lake Mead National Recreation Area (<http://www.nps.gov/lame/planyourvisit/maps.htm>), Lake Mohave boasts the uncommon blessing in today's over-developed and hyper-regulated world of a virtually empty desert landscape and unlimited shoreline camping. We found our beach campsite with a generous arc of clean gravel and a fine view across two miles of lake and mountains beyond.

Gorden, Jeff, and Sabin lounged ashore but Tom and I offloaded our camping gear and promptly headed back out to further acquaint ourselves with the sailing characteristics of #114. She perhaps needs a boom vang and some other rigging refinements to improve the sail handling and trim. Stopping the leak at the dagger board trunk would be a plus. Such concerns are minor, however, compared to the joy of bringing a vintage craft back to the water and sailing her in a perfect breeze on a perfect spring day.

Two can easily sleep aboard #114. A canvas tent covering the cockpit was part of the original design and remarkably it is still around and in good condition. Jeff bunked aboard the Myst yawl but the rest of us preferred to pitch tents ashore. The boom tent is just one of the many thoughtful details Joe Dobler designed and built into #114. Some other examples:

While there is no fixed deck at all, there is a canvas spray deck which may be deployed forward of the mast.

For single handing there is a tiller line system for steering from any position in the boat via a continuous line threaded around the perimeter of the boat and attached with blocks to the tiller.

Joe provided, in the era before the ubiquitous watertight plastic access/inspection plates, a clever homemade version built of wood, for access to built-in floatation tanks fore and aft.

The floorboards include strategically placed holes for various needs like foot braces for rowing, locking pins, and a place to reach through and pump out bilge water.

There are alternate deep and shallow profile Rudders provided.

The wooden mast is a wonder. It is jointed in the middle for storage inside the hull (OK, not unique) and it also is hollow and has internal halyards. I've never seen that combination before.

A piece of the transom is removable so that a small outboard can be mounted in the notch vs. the need for a separate "bolt-on" motor mount.

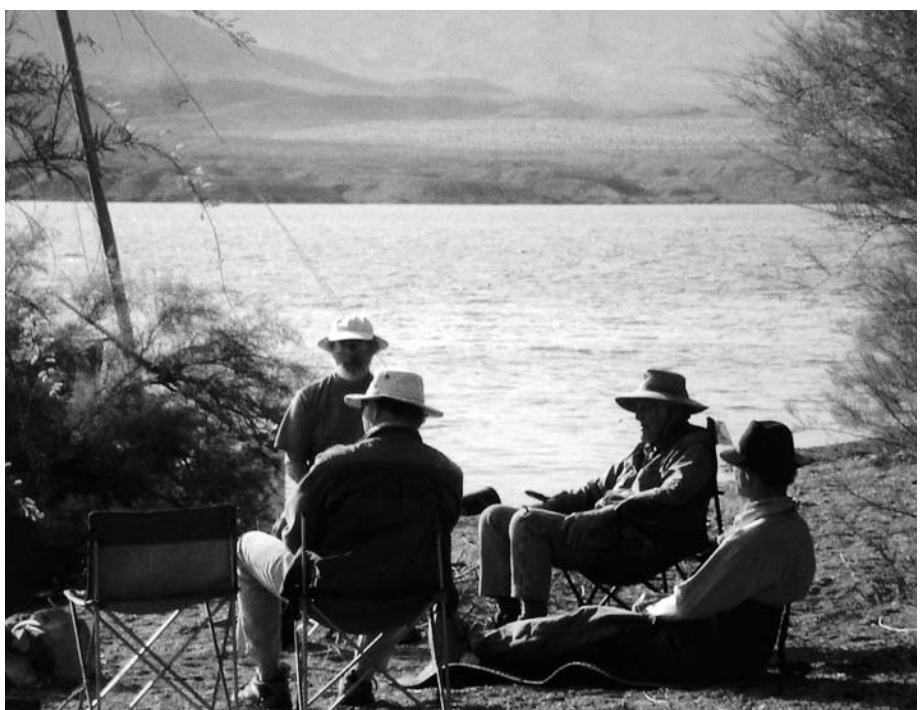
There are three bench thwarts and two are easily removable.

There are three optional rowing stations.

There are two plywood boxes for camping gear which fit flush between the seat thwarts and are notched to fit over the hull frames. Combined with plywood platforms that bridge between thwarts, they form a sleeping platform for two.

Saturday dawned clear and calm. Gorden had to return to Cottonwood Cove and head home before the rest of us. We thus had the opportunity to deploy the outboard and test the motoring option. My 2hp Honda handily both pushed #114 and towed the yawl three miles back to the marina. The launch ramp scene on Saturday morning was much different than before, now busy and testosterone charged with water rockets of various descriptions.

We decided to have a farewell lunch with Gorden at the waterfront diner. When we came out later our bellies were full, the day had become quite warm (110° is common here, later in mid-summer), and there was still no wind. The plan had been to find another campsite and stay another night. Then Jeff said, "You know, for 50¢ you could get me to pack up and go home right now." With no wind in the forecast, discretion seemed the better part of valor. So we retreated homeward, not in defeat, but rather satisfied that we got what we came for. I hope there will be other camp cruising outings soon in #114 (gotta get her a real name).

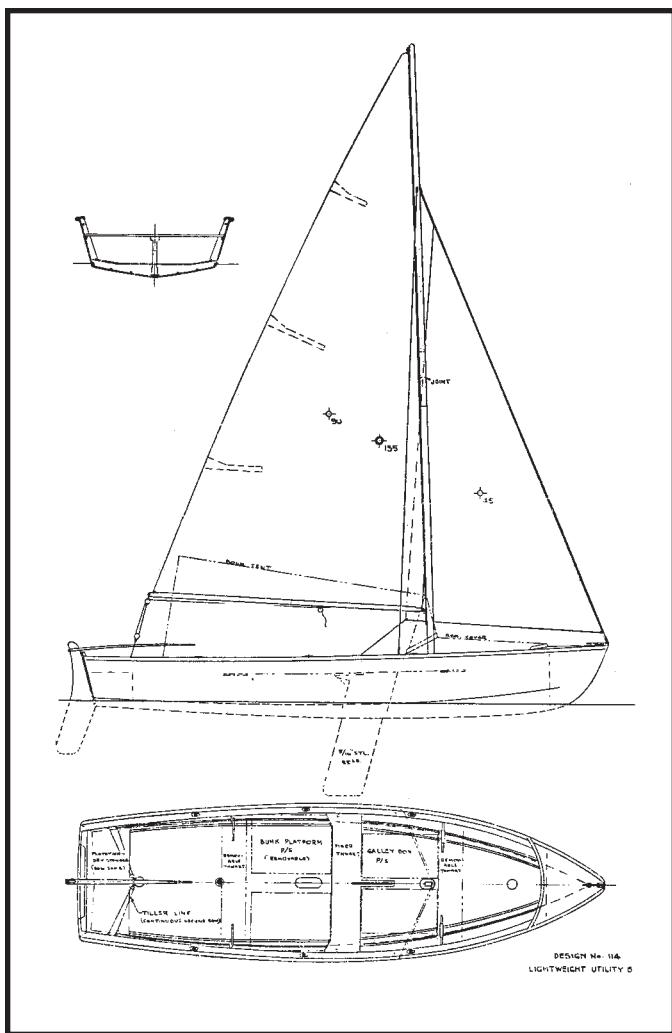


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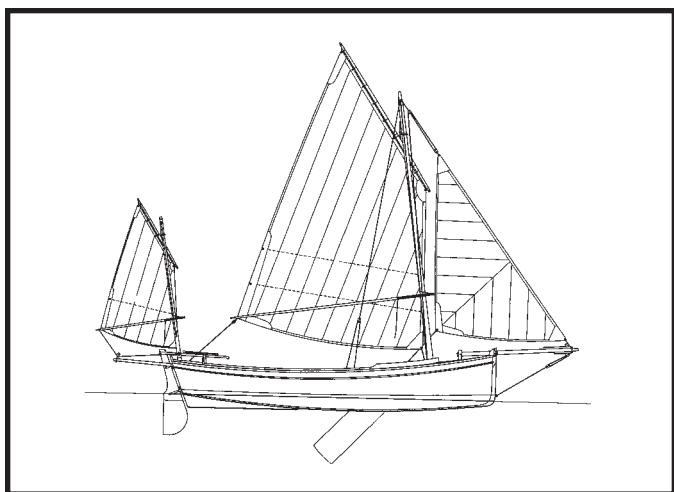
Camped on the Arizona shore of Lake Mohave.

Thinking about dinner but too relaxed to move just yet.

The typical Lake Mohave rig.



Joe Dobler's #114 Skiff.



The Myst yawl.

#114 tows the Myst on a calm Saturday morning.



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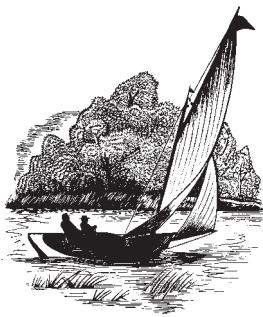
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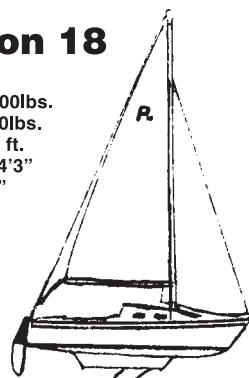
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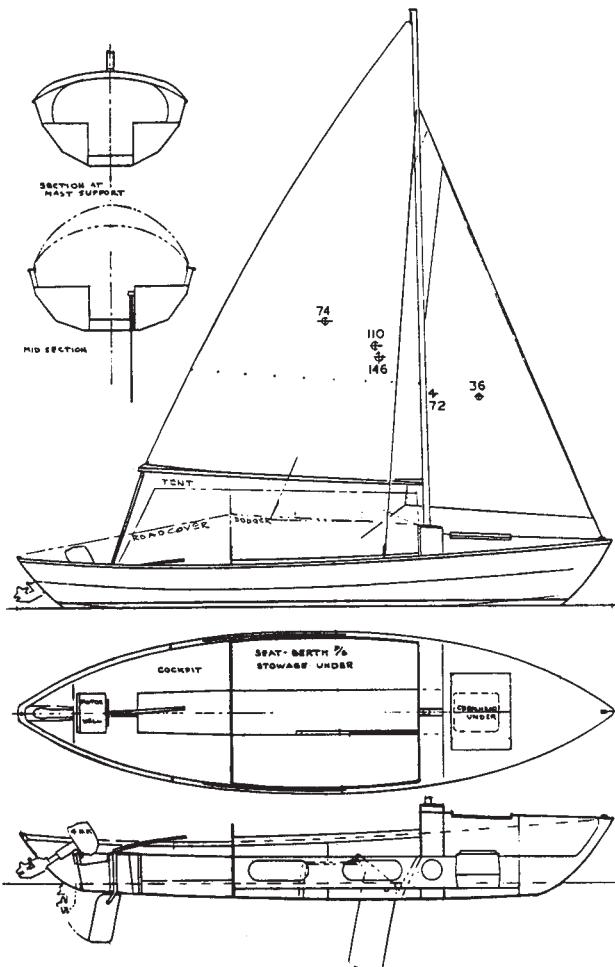
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Kim Apel's tale of the return of a Joe Dobler skiff reminded me of this feature article that appeared in the August 15, 1984, issue as part of an ongoing series at that time featuring camper/cruiser designs. I thought it would complement Kim's story and so reproduce it here as it originally appeared.

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Nootka Sound is a camping cruiser. It was an original design for Bob Young of Lake Oswego, Oregon, but generally similar to several earlier designs. Among the requirements were: light weight for good trailerability with normal family cars; shoal draft; good performance with sail, oars, or a small outboard motor; and good rough water performance. The main requirement, though, was cruising facilities for two people, something better than backpacking if not up to luxury yacht standards.

Camp cruising has been going on at least since John MacGregor with his Rob Roy canoes beginning in 1865. MacGregor said that the drawback of his little canoes was that progress was mainly dependent on muscular effort, that food must be had from shore, and that he could not sleep on the water. Later he had a 21' yawl which overcame those deficiencies but lacked the easy portability of his canoes. Modern light trailer boats now available can provide what the canoes lacked and portability, too. Provisions for sleeping aboard enable the crew to use campground facilities on long hauls that require stopping overnight.

Trailerability is a key word. Here on the West Coast we sometimes drive a long way for our boating. From Los Angeles it is about 1,200 miles to Port Townsend, 1,100 to Yellowstone Park, and 1,200 to the tip of the Baja, California, peninsula. Such distances make one appreciate the advantages of a lightweight rig. Nootka Sound and trailer can be made to gross

out at under 1,000lbs. This makes towing without special equipment possible for most of the present crop of smaller cars.

The hull form is pretty much Swampscott dory with a bit of whaleboat mixed in. It has the flat bottom of the dory but the bilge sections are filled in somewhat, increasing the displacement and minimizing the "tiddly" nature of the dory. The flat bottom is a big plus for trailering.

The construction is taped seam plywood. This system makes a boat that is light but very strong. It never leaks. It is ideal for the amateur builder. Boat building skills are not required and the average amateur can do a very creditable job the first time.

Marine grade fir plywood is used for all structure. The bottom is $\frac{1}{2}$ " and the rest $\frac{3}{4}$ ". All joints are joined with fiberglass tape and epoxy and the exterior is sheathed with fiberglass cloth and epoxy. The benches on each side form the cockpit seats and berths. Fixed foam flotation under them can provide stability if the boat is filled with water. The space under provides ample stowage. The board is steel plate with the trunk offset to give better foot room. The inboard rudder swings up and can be removed by pulling a plug from its trunk.

Bob's friend Sam McKinney had been operating group canoe cruises on the west coast of Vancouver Island. He had been thinking of an escort/mother ship to go along with the canoes. When he saw the plans for Nootka Sound he decided that it was what he had

been looking for. They both started building. That was in December 1973. Sam finished his boat in August, 1974. Bob, who had less spare time, finished his about a year later.

Sam did some solo cruising and Sam and Bob together cruised Kyuquot Sound, Nootka Sound, and other waters of the west coast of Vancouver Island. They were well pleased with the boat's handling qualities and rough water performance.

In 1975 Sam cruised the length of the Strait of Georgia from Olympia to Desolation Sound (a fabulous cruising area) and then back to Port Townsend, a month-long cruise that covered close to 1,000 miles.

Bob finished his boat about the time of Sam's return from his long cruise. Eager for a cruise, he was about to head for the San Juan Islands and suggested that I come along. Sam generously invited me to take his boat, which was still in Port Townsend. A San Juan Island cruise had been a dream project of mine for many years. I briefly weighed duty against pleasure. Pleasure won and I accepted gladly.

Our ten-day cruise from September 15 took us from Port Townsend to all the larger islands and back down Puget Sound to Olympia. We took our time and visited points of interest along the way. The weather was good, the air and water clean, and the natives friendly. It was a perfect cruise. Two people cruising together in identical small boats makes an arrangement that would be hard to beat.

The needs and parameters vary greatly, but most of those who build or own boats eventually feel the need for some sort of temporary or permanent shelter over the object of their labor and affection. Unless it's a really big vessel remember that, once built, you will probably want to keep dragging your boat back home and putting it under a roof so the structure should have some permanence to it. One of the first rules in this business is that most things that were originally designed to be "temporary" often end up being permanent.

So it was that the cheap plastic hoop house that I once slapped together to protect a kayak was still on my property almost 20 years later. While the frame stood through three different hurricanes, its coverings have had to be replaced five different times. I tried cheap 10mil plastic, really expensive greenhouse covering (twice), and gray plastic tarps (thrice). While I didn't necessarily view the hoop house as an eyesore, a former wife and various female companions that I have had during subsequent time frames did not share that feeling. The only good thing about it is that it turned out to be better than nothing and it was fun to sit out in it during a thunderstorm and watch the lightning dance around in the sky.

If there was a lesson to be learned here it is that a little more time, money, and effort spent initially would have resulted in a sturdier structure that would not require either replacement or repair. I will build more boats and boat sheds and I will put more money, labor, and material into them so that they will handle storms, possible snow loads, and the kind of abuse that most buildings have to deal with.

Since most boat sheds are "temporary" they may not be subject to the same building code restrictions that houses are. Having taught building science in a college setting for roughly 30 years I've come to know a thing or two about constructing a boat shed that will hold together at minimal cost.

One of the first considerations is the size of the vessel to be built or stored. Experience and hard knocks have taught me that a minimum of from 4' to 6' of clearance are needed on each side of said vessel with even more clearance required on the ends. If it is a larger vessel that will be rolled over, a lot more room than that will be needed. Workbenches and shelves are necessary to hold tools and accumulated stuff and they will require even more room.

Thus, if the vessel in question is 6' wide by 16' long it will require a building at least 16' wide by roughly 24' long. If stationary power equipment is used or stored inside, said building will need to be even larger. If lumber storage is required, racks can be built into the walls and the wall framing should be increased in dimension to allow for that. If the structure has large, broad eaves, lumber can be stored out of the sun (north side in the Northern Hemisphere) and rain. I have never heard anyone complain that their shop or boat shelter was too large, but some were definitely too high. Lower buildings create less of a visual impact and present less surface area to the wind, something worth considering if meddlesome neighbors or high winds are a problem.

Headroom should be at least a foot. If the boat to be built is big enough to stand on, then additional headroom will be needed when standing on the deck. Plan for it when build-

Building a Boat Shed

By Mark White

ing. If the boat will be turned over inside the shop, sufficient room needs to be provided for that to occur and the roof framing needs to be strong enough to support the weight. Large vessels will require constant comings and goings and, though it may be a royal pain, one is best advised to leave the transom out until the very end because going up and down ladders for every little thing gets very old very quickly. Birds nesting in the rafters will cause a problem with their droppings. A few plastic snakes from the toy department of Target or WalMart, hung in the rafters, tend to discourage birds, even in places like Alaska which have no natural snakes.

If big enough lumber is available at a reasonable price a standard single-pitch shed roof will provide a structure that will go up fast and do the job. Boat builders often have access to sawmills which are key to lumber access. Going to a retail chain means paying quite a number of hands, each of which has its considerable amount of profit. If trees are personally owned, or access to blow downs is available, the price goes down considerably. Being able to cut, move, and slice up said trees with one's own or borrowed equipment, if one has the time and strength, the price of lumber is virtually free in any amount. A web site worth looking at is harvestingurbantimber.com.

Three swing blade sawmills that I can recommend are Peterson, Lucas, and Brand X. The first two are light in weight and designed to be carried to the log in pieces and set up around said log on the ground. They use a small circular swing blade (that cuts at once vertically and then horizontally on the backstroke). The more expensive models can be used to cut framing material up to 10"x20" of any length with track extensions. They can cut logs up to about 8' in diameter. Since the swing blade is flat on one side and cuts small pieces off the top, it can whittle small or medium pieces out of almost any log. Billions of cubic feet of timber are thrown into landfills or burned for firewood each year simply because of lack of equipment, knowledge, and desire. The swing blade sawmills opened up lots of timber for utilization. The kinds of frames I am talking about in this article are very tolerant of lumber variations.

Any boat shop will require doors and large doors on both ends of a building are quite useful, especially when a lot of sanding, painting, grinding, or welding is necessary. A large fan at one end can pull or throw a lot of dust or fumes out the other end when both doors are open. Another approach is a louvered panel high in one end and a large fan to suck out fumes. A small man door at one end or in the middle is also useful. Plan the path of movement with care as it will be travelled often.

Of all the doors I've built I like the bi-fold airplane hanger type the most. These fold in the middle as they rise up on a sort of track which is really just a flat post. The bi-fold doors can be bought or built. They look pretty simple but there is a very sharp learning curve is encountered if making them. A large roller on the bottom corner of each door is key. Raising and lowering said door is usually done with wire cable, nylon straps, or line involving some sort of winch or motor.

Doors that roll side to side are also good and the technology behind these is getting better. It usually involves a piece of steel angle bolted to the floor and grooved steel rollers beneath said door. The oldest type of door is the swinging door, but these are prone to sagging and rattling in the wind so are not recommended. Some shops are open sheds, without ends, but these only work well if the property is very secure.

Fire and thievery are things to be concerned about in many areas and a secure building with metal sides and a masonry floor is useful in these regards. A low, lockable metal cabinet, positioned out on clear ground, is useful for the storage of fuels, varnish, and flammable solvents. Fiberglass resin and some glues have to be kept from freezing or they will spoil, so an insulated and modestly heated (during freezing weather) storage locker is a good plan for these flammable liquids. Very few anticipate fire but it is a very real danger. I like a fireproof floor, a metal roof, and even metal or cement siding. I also like to put all of my wiring in steel conduit and I am very careful with rags, sawdust, and combustible liquids.

The cheapest sort of real foundation turns out to be concrete poured into small holes dug or augured into the ground. If you do this be sure to bell out or widen the bottom of each hole to give greater bearing area and withdrawal resistance. It is always best to tie the individual piers of concrete to each other with $\frac{3}{8}$ " rebar (cast in) to provide greater strength to the foundation. Some company makes a plastic mold called Bigfoot that works in holes to limit the amount of concrete used yet provide a larger footprint for pole type foundations. To some degree the plastic covering also limits some of the water that may soak into the concrete and the poles at a later date. The bell out of the bottoms of holes sounds like overkill, but it may prevent your building from being overturned or crushed in the event of a big blow. Some people use 2"x12"x12" concrete pavers in the bottom of each hole (on top of a little dry ready-mix) before they pour concrete in.

For those who don't know, 2,500lb rated concrete is strong enough for most foundation applications. In areas where freezing occurs it pays to put the bottoms of the footings well below the frost line to eliminate the possibility of frost heave. Smooth plastic wrapped around the pours will prevent water (and ice) from sticking to the sides of said foundation as well, reducing the likelihood of frost uplift.

In most cases moisture should be restricted, which means that the level of the shop floor within the proposed building should be built up at least 6" above grade level with some sort of dirt or gravel fill. A vapor barrier (minimum of 10mil poly or layers of some tougher plastic film) should be placed on top of the soil or gravel pad with some sort of floor covering placed over that. This is usually done after the foundation wall framing supports and rebar ties are cast in place but before the building itself is erected. Not using a vapor barrier on the floor will create major problems with water vapor entering the building from below, with water condensing on the roof in the morning causing it to rain inside on most days. This can be very disconcerting when applying paint or fiberglass.

Floor coverings vary with location. I have seen gravel, chert, asphalt, crushed limestone fines, clam shells, shingle cutouts,

bricks, pavers, and concrete used, all to good effect. Since I often weld I prefer a floor that is fireproof. If a floor is built up to be above grade it should end up being moderately waterproof and fireproof. A bit of crown will help water and spilled liquids drain off to the sides. While wood is moderately comfortable to walk on (and useful for nailing to), it is definitely not fireproof. A wood floor often is a haven for rodents and spiders, which we all can do without.

To repeat, the most important component of a floor is a vapor barrier on top of the fill, critical to keeping the interior at moderately low humidity level. Aside from the obvious leaking roof or lack of gutters and downspouts, the ground connection is the biggest source of the interior moisture that tends to rust tools and promote condensation. I once worked in a large metal building built on a dock in a shipyard and it rained heavily almost every morning inside that building, due to condensation.

For the building itself, pole barn technology is usually the least expensive and a good way to go. Depending on the size of the structure, treated poles of various diameters are inserted into the ground. Some are bare treated wood tree trunks or telegraph poles inserted directly into bare ground. Others are sheathed in plastic and embedded in concrete. The poles range in size from tree trunks up to 16" diameter, to 8"x8"s, 6"x6"s, 4"x6"s, 3"x6"s, and 2"x6"s, depending on the scale of the building. Used power poles are a waste product of the power industry and are often easy to come by at little or no cost. Some square these poles up on the corners or outer edges with a broad axe or a chainsaw to provide surfaces to measure to on the walls.

In damp areas the bases of said poles should be wrapped or covered with, or dipped in, plastic to keep moisture out of the wood. Some yards offer treated bases spliced, laminated, and glued to untreated upper poles. All concrete is porous and does not perform the function of keeping water out of the bases of wood posts. Bolts are sometimes driven into or through the bases of the posts to give the concrete footings something to hang onto in an effort to prevent possible uplift in violent storms. Another solution is to gently groove the bases of said poles with a chainsaw, axe or drawknife.

Because pole buildings and prefab metal buildings are often professionally engineered, they use the minimal (but adequate) amount of material required for each situation. Poles are typically placed on sidewall centers that may range from 8' to 12'. Sidewall coverings are typically 26 gauge metal (about .018" thick). Builders are constantly striving to use thinner metal in buildings. Older buildings I've seen used 16 gauge metal (about $\frac{1}{6}$ " thick (.062"), almost four times thicker). Corrugated metal used by the US Army during WWII on some Quonset huts was often $\frac{3}{6}$ " thick, about ten times thicker. Many of these are still standing and still in use in various parts of the world. The word Quonset, by the way, comes from where most of those early prefab buildings were made in Quonset, Rhode Island. But a boat shop needs plenty of natural light and that's where most Quonsets with solid roofs fall short.

If all that is needed is a roof to shelter a small vessel from sun and rain, a prefab, clearspan, metal car shelter may be the least

expensive solution. These are cheap and fast to erect but they should be anchored to embedded concrete or anchored to buried deadmen with cables. Metal anchors are available that are essentially short metal rods with a cable tie attached to the center. These are driven deep into soil with another metal rod. In use, they assume a horizontal position and will withstand a considerable amount of force as long as the cables don't rust out.

I've seen more than a few cheap sun shelters blown across a field or lying upside down in someone's backyard. They are more stable in the upside down position than otherwise. Anchoring one of these shelters to the earth is far less expensive than losing it in a windstorm. Bracing, bolting, and proper attachment to the surface of the earth are all too often neglected with the construction of these lightweight shelters. Gravity, our constant companion, means almost nothing when the wind starts to blow and gust.

While plastic hoop houses are cheap and fast to erect, they lack structural rigidity, and I wouldn't recommend repeating the plastic hoop house experiment. A 20' piece of plastic water pipe is pretty floppy and is, after all, designed to carry water, not as a structural member. Twenty-foot lengths will yield a floppy structure that is about 12' wide and 7' high, not quite big enough to be useful. The resulting structure, covered with plastic, is cheap to build but doesn't afford much protection in any sort of breeze. In the sun the plastic framing outgases and releases fumes that accelerate the deterioration of plastic membranes applied over such frames. The typical 6mil poly film will rarely last a year over a PVC water pipe frame. When it fails it often does so where said membrane rests against the PVC frames. Birds and falling branches will put holes in the plastic or fabric and these holes can be very difficult to repair because they are difficult to access. Often, there is nowhere to stand to reach the holes.

A friend built a large, wooden, truss-style hoop house using two sets of green, 20' 1"x4"s for the inner and outer chords, joining each set together at the top. He thus had a combined truss member that was virtually 40' long for the outer chord, providing space inside that was quite reasonable for a vessel's construction. Inner and outer chords were held apart with 8"x8" pieces of $\frac{3}{8}$ " plywood, roughly nailed in pairs at 2' intervals. Said plywood was nailed with its face grain perpendicular to the chords. The frames were set up at 4' intervals on trapezoidal concrete foundation blocks laid directly on soil. The outsides of the frames and the outside corners of the plywood gussets were sanded smooth with a flexible disc grinder. The bottom 4' of both sides of the frames were covered with $\frac{3}{8}$ " plywood.

The whole (Quonset-like) frame was then covered with a very expensive white tarp that probably cost upwards of \$2,000 in today's money. Putting that heavy tarp up and anchoring it were difficult chores. Even though the craftsmanship was very poor, the building has stood steadfast in a dense forest, subjected to the severe winter winds of Alaska. It has served admirably as a welding and fabrication shop for well over 30 years, with minimal upkeep.

A similar structure could be built with 1"x3" green bending oak or $\frac{3}{8}$ "x2" steel or aluminum channel. The beauty of this system is that just one frame half mold needs to be built. All the frame halves can be clamped to

this one mold and assembled, the difficulty being attachment of plywood gussets on the downward side before removal. We did such a thing in a college setting years ago and found that a carefully constructed mold and temporary spacing blocks (and some sort of swinging trunnion) allowed both sides to be worked on easily. Construction was very rapid, and very precise. It is important to get gussets on both sides of the chords before releasing the frame from the male mold or the frame will twist badly.

The sides of such a structure can be curved in different, subtle ways to allow a shallow, wider building or a taller, narrower building. Spacing between the inner and outer chords should be a little wider towards the middle of each frame and narrower at the ends. That is the way most clear span metal building frames are constructed today and it is best not to buck this tradition. The middle should take the most bend while it is best not to bend the ends of the chords very much at all. It is surprising how much longer the outer chord will usually be in comparison to the inner chord. If welding is an option, painted or galvanized steel will provide a metal frame that is far superior to wood.

The finding of green, relatively long, clear strips of wood that will take a bend without splitting is the most difficult part of the hoop house operation. Green bending oak fills the bill most effectively, but it has to be used immediately upon cutting and should not be allowed to dry out before bending it. A small radius put on the corners with a router will help prevent splitting. A coat or two of white Filz primer or aluminum paint will keep the oak from drying out prematurely and may help keep it from checking. Glue placed between the plywood and the wood adds considerably to the strength of joints. A pneumatic stapler is the fastest and most economical method of fastening.

If the outside frame will be covered with fabric or clear plastic instead of metal, horizontal stringers should be placed on the insides of the frames so that an exterior covering on the roof won't sag and fill with water at each stringer. If leaks develop in a plastic covering they can be patched with duct tape but it will not be easy to walk or crawl on the surface of a plastic covering. Old fish net or gill net placed tightly on both sides of a thin plastic cover will help it to last a lot longer and take some of the noise out of it when the wind blows. Plastic changes considerably in dimension with temperature. Getting a plastic cover really tight in hot weather may cause it to fail catastrophically in cold weather. While corrugated metal is initially more expensive, it will provide a far more reliable and durable roof.

If the structure is to be covered with #26 gauge corrugated metal the frames should be placed on 4' centers. The corrugated metal will take care of much of the requirement for horizontal stringers and X-bracing. I have seen corrugated metal placed on frames spaced between 5' and 6' apart, but one needs snowshoes (made for the purpose by the roofing industry) to walk upon roofing that is not very well supported. Heavy snow loads on metal roofing can cause it to sag or fail if it is not supported closer than on 5' centers, in many areas.

Another tack is to cover the frames with 2"x3" stringers placed on edge and perpendicular to the frames on 2' or 3' centers. The metal can then be screwed to these stringers.

Said stringers should be anchored to the frames with $\frac{1}{8}$ " through bolts or metal clips made for the purpose. This traditional approach can take more time than simply screwing the roofing directly to the framing horizontally, but it may tend to drain water off more effectively if heavy snow is involved. I used to think metal roofing was invulnerable to leaking but attention to detail is critical in getting any roof to be leak proof. I have seen many expensive metal roofs on houses and offices with generous pitches that leaked badly, and I have also seen plenty of cheap carports with metal placed sideways (horizontally) that never leaked at all.

It will be easiest to work from the top down with metal roofing that is placed horizontally (start in the middle and work down both sides), sliding the edge of each section under the last and sealing same with heavy, double-sided tape made for the purpose after screwing most of a panel down. The tape is applied to the top rib of the lowest piece of metal, slid under the next rib, and then the panel is fastened to the wood or metal below with a few screws. A thin piece of greased paper in the roll keeps the top of the tape from sticking to the metal above during placement. The tape is pulled off after placement so that the two pieces of metal can be bonded together. Short, heavy screws called stitch screws fasten the laps. The tape is filled with clay and mastic, is waterproof, and appears to be very long lived. Metal screws with rubber washers should be used to screw the flat part of each sheet (close to each rib) to the wood below.

A hammer with a center punch is a good way to penetrate sheet metal over wood so that screws can be started. This is a little faster and a lot easier than waiting for a dull drill bit or a self-drilling, self-tapping screw to accomplish the same objective. Mark the holes carefully with a marker to avoid missing the frames below! I like to drill each hole through sheet metal and metal framing first, using a fairly small bit and a touch of lube in combination with a small, light, fast drill motor. The problem with a powerful drill motor is that it needs torque to drive screws but does not have enough speed to easily drill a hole, and if a little lube isn't used the tip on the screw often burns out.

It doesn't take much time to drill through metal roofing but metal frames, girts, purlins, or stringers below are often difficult to penetrate. I use a small metal can with a little saturated cotton waste in the bottom and a circular magnet to hold the can to the roofing metal. A rule of thumb is that 1" of screw should hold metal to oak securely, while 2" of screw protrusion will do the job easily with metal framing. On softer wood framing I would use 1 $\frac{1}{2}$ " screws. Hex head metal screws with neoprene washers are fairly expensive but it pays not to skimp here. In high wind situations I will often place a screw on each side of a metal rib at each frame. Better to overdo it than to lose panels.

Commercial metal buildings have massively strong frames placed on 20' to 24' centers. These frames are then covered with purlins (in roofs) or girts (in walls) that are usually formed into C or Z sections. Z sections are preferred as they are easily overlapped which adds strength in joints. Overlapping also eliminates the need to laboriously cut each Z metal piece to length. C sections, unfortunately, must be butted to each other, which requires very accurate cut-

ting and placement. In such buildings corrugated metal panels are placed parallel to the frames, perpendicular to the purlins and girts. The other approach is to have many smaller frames placed on 4' centers with the metal covering running parallel to the horizon. In such situations where the roofing is laid parallel to the ground, a longitudinal slope of at least $\frac{1}{4}$ " per foot is mandatory. Water will then run off one end of the roof rather than mostly off the eaves (edges).

It would take a little effort to build bent frame halves with either wood or steel but I remain very impressed with the possibilities. Laying out a proper frame with pleasant curves and proportions is worth the time. Such a system represents the least expensive solution in terms of labor and money. Always build a model of the structure or the structure's frame first. It will help you to discover expensive pitfalls before the fact, rather than after.

A wood frame, with all the sharp corners sanded down, or a painted or hot-dipped metal frame, can be covered with a plastic greenhouse membrane that will probably last from two to eight years, depending on sun and wind conditions. Tek Supply (800-835-7877) sells tubular frame and fabric shelters of almost any size (with anchors) that hold up fairly well. I bought an 18'x40' metal frame with a fabric cover from Tek Supply that went through Hurricane Ivan, 200 miles above the southern coast of the US, without a failure. The frame is pretty bent up now but the structure is still standing and covering, and is currently about six years old.

One of the problems that is not mentioned by vendors of fabric structures is that some birds in certain areas have a proclivity to perch on top and pick at the fabric and seam threads, causing leaks and seam failures. I have noticed this more in coastal areas than anywhere else. I don't think that said birds are necessarily trying to be malicious, I just think that they have too much time on their hands (no TV). Plastic owls mounted near the buildings did not help. If this happens to your structure it can pose serious problems. Birds tend to have a more difficult time messing up a steel roof (although their poop is very salty and promotes corrosion) so steel is the material I would choose for future roof coverings.

If you live in a gated community there may be pressure from neighbors and homeowner associations to build a structure that conforms to (looks like) your finished home. Roof shape, roof covering, windows, and wall covering is mostly what the HO associations are talking about here. I have seen plenty of arm flapping, shouting, angst, heartache, misery, and lawsuits that have resulted when some neighbor's wife got a bee in her bonnet over a boating enthusiast and his/her stuff. Interestingly, if said structure is called a "garden greenhouse" or a "plant conservatory" instead of a boat shop, many of the zoning problems often disappear. Metal frames aren't picked on as often as wood frames, for reasons I don't totally understand. I guess they look more "professional" and finished. Galvanized steel frames are strong and hold up against corrosion a long time while wood frames can deteriorate quickly under a plastic covering.

Tree or tall bush plantings can often shroud the view of your acquisitions. Use plants that have foliage all year long and plant them in dense stands. In warm climates bamboo works very well if it is well watered.

If the neighbors can't see your boat or your boat shed they probably won't bitch about it.

A great truth about wood frame construction: Rectangles aren't very strong because the square corners can easily bend, flex, or move. Triangles are incredibly strong because the corners can't move unless they actually separate. The strongest point in a three-sided roof truss is at the very top of the triangle, pressing down. If you need to lift your vessel to turn it over, that's where you need to pull from.

The standard W-truss takes two tension members downwards from the center top portion of the truss and ties them into the bottom chord. Then two compression members rise up from those two points and strengthen the centers of the two top chords to keep them from sagging. Obviously the standard W-truss looks like a W has been placed within the standard roof truss triangle. More complex trusses are variations on that same theme. Today's trusses (either wood or metal) are miracles of efficiency.

In either wood or metal, roof trusses can be extremely strong for their weight. The weakness in wood trusses is almost always in the joint connections. If a wood truss fails it will almost always do so at one or more of the joints, rarely in the middle of any one piece of clear wood. Screwing corrugated metal roofing over wood or metal frames adds considerable rigidity to their structure. If the framing is a little convex on the outside, the side curve bent into the metal covering will cause it to increase considerably in strength. Wood members that have some natural curvature along one edge should be placed with the crown of that curvature facing up. The corrugations of the metal covering don't necessarily have to be perpendicular to the horizon, but some small amount of angle must be provided to allow for drainage. I would suggest at least $\frac{1}{4}$ " per foot. Corrugated metal does not like to be bent perpendicular to its corrugations. Don't attempt it.

Debris from trees that accumulates on a roof must be removed periodically or there will be problems. If walking on a metal roof, the safest places to step are directly on the screws holding the metal to the framing. Gutters are very important so water that runs off the roof can be led safely away from the building. A roof with two pitches will require two gutters while a roof with a single slope (a shed roof) will only require one gutter. In most areas I like to catch the roof water and use it for irrigation or washing. A rain barrel is a useful thing in most areas. Mosquitoes in water can be discouraged with little chemical donuts that interfere with their fertility, but do not poison the water.

Builders of metal buildings often X in square portions of frames with steel rods or steel cables, tensioned with turnbuckles or nuts. This act tensions the square sections and provides the rigidity of a triangle that may be greater than what a typical metal covering would provide.

Understanding structural loading is intuitive for a few, but not for most. The greatest strain on a frame is usually at the knuckle where wall transitions into roof. A wall/half-roof section can be likened to a single truss, which should have its greatest strength in the middle. The knuckle (middle) is usually much wider in section in order to compensate for the strain in engineered metal buildings. If two of these half-frames are joined together at

the peak of the roof, they lean against each other and provide greater strength.

The science of carpentry has been greatly advanced in recent years with the strain of storms and high winds causing much publicized building failures in the Gulf Coast area. The wood frame building of even 20 years ago seems to have been built in the Dark Ages compared to what we have available now. Building codes in places like Homestead, Florida, have been tightened and structures in coastal areas are now more carefully designed than ever before. Gravity is no longer the only force we have to contend with when building a structure, and engineered buildings are now capable of resisting winds well above 200mph.

Most manufacturers of metal buildings have computer programs that can handily design a structure to contend with any wind load. Metal is now used heavily to connect wooden members to each other. In metal buildings more attention is being placed on anchoring a solid frame to a strong concrete foundation, purlins are being placed more closely together, and screws with bigger heads and stronger shanks are used on closer spacing to tie metal to framing.

Wooden houses use a lot more steel to tie wooden components together. Even the lowly nail has been greatly improved (note the Senco, pneumatically installed, Hurriquake nail) with a heavily barbed, hardened shank and a larger head. Wood is moderately strong, especially when properly engineered. We are told that the average piece of pine has a tensile strength, along the grain, of roughly 9,000psi. Oak is said to have a tensile strength of 16,000psi and, if predrilled, oak holds screws a whole lot better than pine. Framing is where even the crummiest steel has an advantage since it has a tensile strength of roughly 60,000psi (60 kpsi), and can be fastened together with a strength equal to the parent metal. When stick welded with 7018 (7018AC for AC welders) by someone skilled in the art, the filler metal has a strength of 70kpsi providing joints that are easily as strong as the rest of the frame.

Metal and concrete are not readily attacked by termites and wood-boring insects and they are considered to be fireproof. Good concrete has a compressive strength ranging between 3 to 5kpsi. The tensile strength of concrete is roughly $\frac{1}{10}$ th of its compressive strength which puts it between .3kpsi and .5kpsi. Steel rebar should always be used to reinforce concrete in situations where its tensile strength will be challenged. Properly done, a welded joint is fully as strong as any part of a steel frame. This, coupled with the fact that metal strips and shapes can be welded end to end, allows very large structures to be assembled.

With metal we are no longer bound by the 16' length of the longest 2"x4" that can be purchased at Home Depot, we can buy or assemble inner and outer chords of almost any length. While most channel and angle is available in 20' to 24' lengths, it can be special ordered in 40' to 60' lengths, but such long metal will be difficult to offload and handle without bending.

I've built a great number of wooden roof trusses using dimensional 2"x6" and 2"x8" lumber, with $\frac{3}{4}$ " plywood gussets and lots of staples at the joints, in lengths of up to 60'. While my trusses were very strong, building inspectors usually don't recognize

the intelligence of the average homeowner and want a licensed engineer to stamp drawings of any truss, be it of wood or steel. The shear strength of even a small 16 gauge, 1.5" staple, between plywood and pine (my test, by hanging on it) is well over 200lbs. Putting 20 staples into one side of a gusset will provide that joint with at least 4,000lbs of shear strength. Gussets, by the way, should be placed on both sides of any truss to ensure symmetrical strain on the chords and webs. Buildings, large and small (that I've built in both Alabama and Alaska) have been subjected to winds beyond 200mph with nary a structural failure.

I will provide some typical building shapes for inspiration. Structures sheathed with metal are typically the least expensive, providing the most value for the least money. Corrugated metal can sometimes be had for far less money when purchased as scrap from contractors of metal buildings. Two to four extra panels are usually ordered for each building by the contractor in case of damage and they accumulate over time. The colors may not match but they can be cleaned, primed, and repainted. The insides of all sheets are usually painted a reflective white or coated with Galvalume.

Again, the most common structure is the typical pole barn. This is usually composed of 6"x6" posts with the bottoms treated and spaced on centers ranging from 8' to 12' on the sidewalls. The sides are usually formed of 2"x6"s that are nailed flat to the poles (easy attachment) and then covered with metal. Since 2"x6"s are stronger edge to edge than flat, a better way to attach these 2"x6" members to the poles would be cutting each one to exact length and toe nailing them between the poles or attaching them with metal clips. If done in this way, the flat sides of the 2"x6"s would face up and down instead of in and out. While slower to install, this would greatly enhance the wall strength and (if the building was not insulated) provide flat surfaces that could be used inside for shelving. In walls these members are called girts, in roofs they are called purlins.

Longer 2"x6"s will sag in this position so small scraps of wood are usually propped under the centers of these members to hold them straight until metal siding takes over and holds them straight. The only fly in this ointment is that nesting birds usually like the flat places for building nests, so if the building will not be sealed it is better to nail the 2"x6"s flat to the poles. Birds will also nest in the webs of the trusses. Plastic snakes will help with this to some degree.

Once the poles are standing, exact heights are marked on each pole and double trusses are set over the poles. Small blocks nailed to the poles help support the trusses, for in the rush to set these trusses with a crane it is easy to make a mistake. It sometimes takes a little prying or pulling to get the trusses to line up properly on the poles.

Double trusses come directly from a truss factory with short pieces of 2"x6" nailed between them on 2' or 3' centers on the crown of the roof. These 2"x6"s separate the trusses the proper amount so that they slide over the side poles and provide secure attachment points for roof purlins. Sometimes the factory simply provides the 2"x6" blocking and it is up to the workers on the job site to nail them in between the trusses. This can be more than a little awkward since the trusses usually show up on the job

site with a crane truck and the operator is usually/always very anxious to offload and be gone in an hour. It is infinitely easier to measure for and nail the roof blocks in place while the trusses are still on the ground.

The trusses are best nailed to the poles in the corners but not in the most obvious place, in the middle. After the crane leaves a worker usually climbs a ladder and bores a hole through the middle of each pole/truss connection and places a $\frac{3}{8}$ "x10" bolt with big washers to firmly connect the truss ends to each pole. Nails will cause problems if a drill bit runs into them, hence one should be careful about where nails are initially placed to hold trusses to poles. Once the bolts are in place more nails can be added to increase shear strength. In some cases, with really long trusses, poles are also placed in center positions as well. This takes a little fiddling to slide the erected poles into each section of truss. It usually takes a man on a ladder positioned at each pole with a small pry bar. Only single trusses are placed on end walls because only half as much roof is supported and that is usually all that is required.

Depending on the span of roof purlins and expected snow loads, roof purlins are made of 2"x4"s, 2"x6"s or 2"x8"s. If the roof is to be insulated a 2' spacing works fairly well, unless fiberglass blanket insulation is used instead of cut batts, and then it doesn't matter since the blanket insulation is laid on perpendicular to the purlins and is taped at the edges. Screws are driven through the metal roofing, through the insulation, and into the roof purlins. The short 2"x6"s that extend from the crown of the roof are used to anchor the roof purlins in an almost vertical position. Nails or bolts in shear are very strong. The rectangle made by the bottom of a truss and two outer poles do not have any triangulation, hence are not particularly stable. Once the building is squared up triangular braces are usually placed between trusses and poles to build in a little more rigidity.

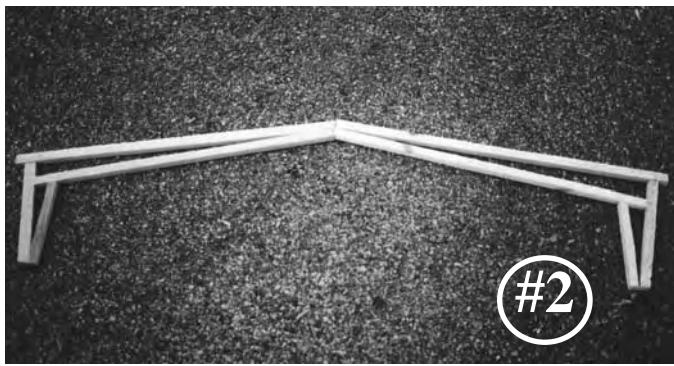
In Alaska I have used 2"x10" purlins on 2' centers spanning 16' in such a pole barn. These have held up to 5' of heavy, wet snow on occasion. I have seen some areas at the heads of valleys that got up to 36' of snow during an Alaskan winter. There aren't many roofs made that will hold up to that without some occasional shoveling.

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#1



#2

Photo #1 shows a model of a typical half-frame which can be used in combination with a small post to make a shed-like building. This structure is strong, stable in wind, and can have its high side facing south for greater solar access. Its low wall makes a good area to fasten a workbench to. In real life this frame would be covered on both sides with plywood gussets, securely fastened to the framing.

Photo #2 shows a pair of half frames set together to make a more standard building. Note that downward forces on a roof transfer into an outward spreading force on the legs. Rolling a vehicle in and out on wet soil in a garage will usually wallow the mud and spread the foundation outwards, which is why it is always a good idea to tie opposing foundation piers or foundation walls together with a piece of $\frac{3}{4}$ " or larger diameter rebar. In areas where corrosion will be a problem use green, epoxy-coated rebar made for the purpose. If the building spans more than 20' the rebar can be connected with threaded collars, or by welding.

While this style of frame (see Photo #3) is usually fabricated with metal, there is no reason why it can't be fabricated with wood. Note how the distance between inner and outer chords increases towards the knuckle, the area of greatest strain. It is critical that the wooden members be joined to each other in a meaningful way with either steel or wooden gussets and multiple fasteners. If rough cut wood from a sawmill is used it will be important to pattern all of the half-frames on the first one and to line up all the outer edges (make them flush) so that the outer dimensions on all of the frames are the same. The edges on the inner surfaces (between chords) are not critical at all, gussets will hold them together with great tolerance. Wooden members that aren't straight or that have taper can be utilized to good effect.

For those who have their own sawmill, the wood near the more highly stressed

knuckles can be tapered to a larger dimension. Photo #5 shows a double-cut sawmill with two blades, capable of cutting a board with a single pass.

The top of the roof surface and the outer wall on a frame can be easily curved or bent into a curve if it is desirable to do so. Once the one half-frame is built it is easy to clamp pieces of wood to that one pattern to make others. I usually place the frame pattern on sawhorses at waist height to make it easier and more comfortable to work on. Gussets stapled to the framing members will hold them rigidly in the desired shape, especially if glue is used as well as fasteners. It is possible to place gussets both below and above a frame, stapling or nailing both to solid wood at the same time.

Photo #4 shows a set of 38' steel trusses fabricated from 1"x2" steel channel with $\frac{1}{2}" \times 1"$ infill. Both the rakes on the upper roof and the bottom chord are curved, the bottom chord more so. Roof uplift can be very strong in severe winds so it is best not to spare the fasteners. The laws of gravity are temporarily suspended when a tornado strikes. A tornado that went through Kansas recently leveled hundreds of buildings but left very tall, solidly constructed, concrete grain elevators standing. Tornadoes are indeed powerful but structures that are strongly constructed can resist them.

Wood tends not to move much during temperature swings while metal expands and contracts to a considerable degree. Corrugated metal easily handles flexing from side to side but has problems flexing parallel to its corrugations. When metal is screwed to wood along (parallel to) rafters the ends tend to work loose where they are screwed to wood, eventually resulting in broken screws or elongated fastener holes that leak near the ends of panels. When corrugated metal is screwed perpendicular to framing members (like on the cheap sun shelters for cars) said metal and framing absorbs movement

induced by temperature more easily, resulting in fewer long-term leaks. Metal on metal has roughly the same coefficient of expansion so temperature swings don't cause the problems they might with metal on wood.

Remember that water in or around a structure can cause almost as much damage as fire. One should be careful about keeping water out and leading it away from a structure through gutters and proper drainage. A Quonset-like structure that has a roof that goes all the way to the ground should also have gutters at the bottom corners to prevent floods and rot inside.

Light is always a useful commodity inside a shop but thin glass or fiberglass or plastic panels on a roof typically cause problems. Lately I have been placing translucent panels just below the roof in sections that go completely around the building. This usually provides enough light to work during the day without causing leaks during inclement weather. South facing windows cause me to do my most critical work facing the south wall and my most important stationary tools and workbenches are always placed in front of these south-facing windows.

In northern climates there may be a need for insulation and supplemental heat if any amount of work is to be conducted during the winter months. If the long axis of the shop faces south, and if solar access is unobstructed, solar heat is definitely the way to go. The south face of most of a wall can be covered with tough, clear greenhouse fabric from about 4' on up to the rafters. Tek Supply sells both the fabric and an inexpensive insulating curtain (used for chicken houses) that rolls up and down like a roman shade. One key to prevent excessive flopping in the breeze is to have the south wall sloping outwards at the base by a foot or two so the fabric drapes over the framing.

Again, plastic glazing swells in heat and shrinks heavily in cold. If you can stand the look, gill net stretched over both sides will



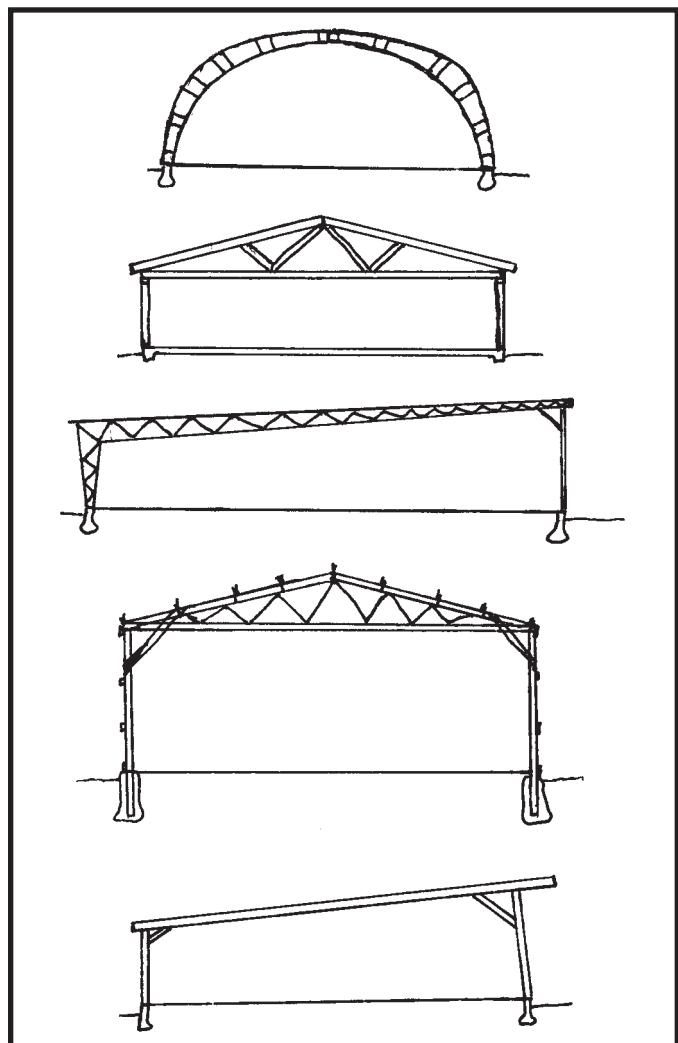
#3



#4

take a lot of the "rustle" out of the clear covering. The insulating curtain should always rest outside the transparent fabric to prevent excessive heat gain that will melt or destroy the plastic. Vertical straps placed over the roman shade hold it in position and keep it from billowing in wind. An hour of sun in the morning can warm things up inside the shop very rapidly. In areas where sun is minimal, the old box stove or barrel stove is a less effective alternative but it will help rid the shop of small wood scraps.

In southern climates heat can be excessive and cooling is often more of a problem than heating. Cheap window air conditioning units or ceiling fans help to take the edge off oppressive heat. Swamp coolers work in some situations but they load up the air with moisture that usually cause problems.



This shelter at an aircraft museum near Tucson, Arizona, is a model of structural efficiency. It is made of sheet metal that has been formed into a brace and then welded and finally bolted together in the field. It is covered with heavy-gauge metal roofing with deep corrugations that allow it to easily span 10'. The metal roofing (through screw attachments) securely braces the framing allowing the structure to stand firm in winds exceeding 100mph from any direction. Boxing the openings in the frames with a little more sheet metal would add even more strength and help to deter nesting birds. Braking (bending) sheet metal is very fast (with the right equipment) and much easier than welding.

Plastic hoop houses have been cheap to erect but difficult to maintain. They may provide temporary cover for painting but are definitely not reliable in the long term.



From top to bottom these drawings show a hoop house that could be formed of wood, or metal channel; a standard type garage with framed walls and fabricated W-trusses; a metal L-frame, which could also be made from wood; a cross section of a pole barn; and a standard shed roof with a little triangular bracing to help with side sway.

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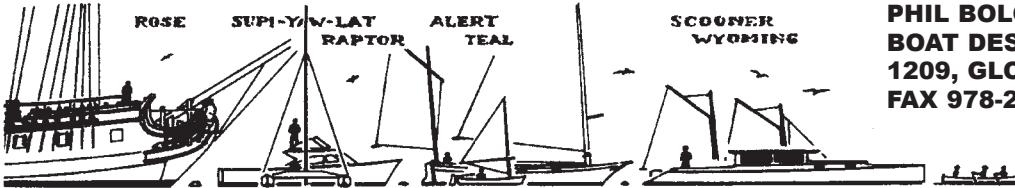
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In the last three issues we developed a narrative on our work in pursuit of sustainability of the fisheries resource, and thus sustainability of the fishing fleet and the communities ashore, by developing a design approach that should match this serious challenge. This time we are discussing how this type of hull can be rapidly assembled using the Dayboat version of Design #679 as an illustration.

Up-front: Anyone considering building this boat should have built at least a modest plywood rowing or outboard skiff (12'-16') before starting this project! Prefinish (almost) everything while it is flat horizontal! Measure thrice, cut once!

Try building #679 under solid cover; i.e., in a workshop. Since renting such a space can be costly over an extended boat building schedule, we propose the following process:

To build this hull first build a kit of its structural members. The kit is designed to consist of a modest number of small and large components. This limited number of components should help keep manhours limited.

This approach allows preparing/building/prefinishing many of her smaller and medium-sized components in a spare bedroom or single car garage before renting the boatshop space. Just measure door and window openings before committing to building larger bulkheads, for instance, in this space!

Only after these pieces are finished to pre-primer stage would the larger building space be necessary. This should keep boatshop rental cost to a minimum.

As a matter of principle, every plywood surface must end up coated in epoxy inside and out according to each manufacturer's usually well-illustrated handbook/suggestions such as by WEST System™, System 3™, etc. Always try to use horizontal placement of components, either on a table or the floor, to make epoxy coating and fiberglass application an easy top down, gravity is your friend approach, which will limit runs, lumps, wrinkles, and the endless sanding off of these later!

If your work is clean enough, a modest skim coat of epoxy with filler added may produce a good enough workboat finish. And use epoxy to glue in place the various foam sheets as epoxy will not damage the foam, unlike some other adhesives, and there must be epoxy on all plywood surfaces facing foam-in sheet, block, and pour-in form, otherwise you're asking for early rot!

Assuming temperatures and humidity are adequate for curing of epoxy, she can be built under a temporary shelter. The land on which she would be assembled does not have to be perfectly smooth and level. Only the actual horses/backbone over which her bottom is assembled, and then the informal hull supports when she is right-side-up to receive her topsides, must be level in relation to each other, a matter relatively easily achieved with wedges, blocking, etc. under them.

Wherever you'd build her, using the

Bolger on Design

Messing About in Fishing Boats

Chapter 4

center of your building space we'd erect a smooth and level worktable that will match the largest bulkheads and the roof top panel and start her construction by fabricating the smallest pieces first, such as the smallest bulkhead, the hatch, motor mount, engine well sides, etc. This way you develop good work habits, efficient use of materials, and make all/almost all of your mistakes early on, working only on relatively cheap pieces that can be replaced readily and won't ruin your budget.

Topsides, raised deck sides, and hull bottom would be built on the floor or over horses. The hull bottom is to be built last as it will take up the most floor space in the shop and is the heaviest item to be handled, including turning it over. Once it is built and right side up, begin attaching the other pieces to it, progressively reducing the stacks of completed components as the hull and its interior rapidly takes shape. With that bottom panel right side up the assembly of the kit into a boat begins in earnest.

A note on assembly of panels longer/wider than standard plywood sheet dimensions:

The bottom panel is assembled by 50/50 overlapping of its two layers of $\frac{1}{2}$ " ply and covered on its underside by several layers of glass cloth before her external keel is applied.

The topsides, raised deck sides, and roof and foredeck surfaces can either be assembled by using butt blocks or by using Payson Joints as shown on the plans. To make a Payson Joint, use a power plane of 3" to hollow out the plywood to take two layers of glass tape bedded in epoxy to produce a flush connection between panels with no protrusion, especially on the side that will take the second course. Turning this panel over with only one side of Payson Joints installed will be tricky and we suggest bracing it with temporary screw-on braces to prevent bending/breaking of this joint. Testing of completed two-sided Payson Joints has proven the surrounding plywood will break before the joint fails. Our old friend Harold H. Payson of South Thomaston, Maine, invented this way of joining plywood panels.

Whether you choose butt blocks or Payson Joints, the outside of each panel should be covered in glass cloth for impact, chafe, abrasion protection, and added strength. Using scarps will throw off any

efficient panel layout based on our assumptions about number of sheets per panel and overall assembly of hull. And to limit the shop floor square footage necessary for this project, we'd propose to build in the following order which keeps clutter and sprawl of completed components to a reasonably rational minimum:

Assembly Run-Through

This design is well integrated in terms of structural and ergonomic attributes; i.e., the raised deck forward or the wheelhouse are structural members. Accordingly, raised deck and wheelhouse are listed under category A "Hull Structure." Different superstructures on this hull require different structural solutions to keep this assembly reasonably coherent. Altering the layout and profile shown will require corresponding adaptations on a case-by-case basis. Since other layouts are on offer with respective concerns addressed, we would propose abstaining from casual mixing and altering of major attributes. Dayboat's sequence:

1. Start with cutting out and finishing to pre-primer stage the smallest structural pieces first, such as the collision bulkhead, and progress through the larger ones until you have built every smaller piece from stem, over all frames, centerboard trunk, and windshield frame to her stern geometry of transom outboard well, motor board, deck, and hatch. Stow all of these pieces in an order reflecting our assembly sequence; i.e., with the collision bulkhead being the first one at hand when the hull assembly gets underway. See Panel 1.

2. Assemble her raised deck and house sides along with the foredeck and housetop and put them aside in similar order; i.e., leaving the raised deck sides accessible first. Remember that they are mirror identical and thus sided directional with fiberglass to be applied on the outside of the panel, the inside will be covered partially or completely with hard foam to enhance her sinking resistance and add to thermal performance in her inhabited spaces but only after they are installed along her chine logs, clamps, and bulkheads.

3. Ditto for the pair of topsides to be assembled next. We would then stow each of these topsides on their side of the shop, ready for installation. See Panel 2.

4. Only then build her bottom upside down of $2' \times \frac{1}{2}$ " plywood over several 36"+ high horses with its forward rocker produced by different height horses. See Panels 3 and 4. Then glass the whole bottom and add the cutwater profile down the centerline of its rockered forward sections, braced by its ribs, along with the centerline keel laminate running aft towards the outboard well cutout. The forefoot is essentially a V-shaped external addition to the bottom panel with rough fit foam pieces filled in with spray-in foam and shaped to the section of the ribs, to be covered by two odd shaped 4" plywood

pieces, the shape of which are defined on the plans. See Panel 5. Then glue/tape against its port and starboard side these two halves of the V of $\frac{1}{2}$ " plywood with the joints filleted and smoothly transitioning into the bottom, covered with glass as well.

5. Turn this (by now approximately 700lb) bottom with the built-in rocker and V-bottom forward over and onto a frame of 2"x4"s on edge and aligned to each other on which the bottom panel is leveled without waves or twists along and across the fore and aft axis, in profile the assembly should be quite stiff already. See Panel 6.

6. Add the chine log, set in from the edge by the $\frac{1}{2}$ " thickness of her topsides plywood and the center spine, both to run uninterrupted fore and aft.

7. Erect the pre-finished partial and full bulkheads on the marks shown on the plans, plumbing the after ones on the flat bottom section and attaching them to the bottom by their primary and then secondary cleats. Attach the forward ones the same way on the curved section of the bottom, but plumb them through reference to the nearest rear bulkhead that sits perpendicular to the bottom. See Panel 6.

8. Hang the preassembled topsides (by now about 150lbs each), resting them on the protruding bottom's edges against the chine log while shooting a few screws to temporarily tack them in place. See Panel 7.

Check for a straight section aft and proper rocker forward on both sides one more time just before loosening them up enough to epoxy the joint without removing the panels again!

After both are located and checked for good fit, pour moderate amounts of regular epoxy between the loose joints of panels and chine logs to thoroughly wet out the joint. Have a second hand check on the pour from the outside of the panel joints on top of the bottom or attempt to confine this fairly liquid epoxy with duct tape over the outside.

Into the wet joint slather again a modest amount of thickened epoxy between chine

log and topsides lower edge just before setting up those and add more screws for a solid overnight clamping action with a solid job of filling and filleting that joint.

Remove screws soon the next morning to prevent them from becoming a permanent part of the assembly.

9. Detail the remaining bottom sandwich core between the bulkheads, spine, and chine logs (but don't install dagger board trunk until foam buoyancy is installed outside of it against the inside of her portside topsides). Around the framing joints where thickened epoxy was carefully filleted, now fill in around the slightly undersized foam panels by applying spray-in foam to be trimmed flush and readied to accept the epoxy on which the plywood sole pieces are to be floated and tacked in place with more temporary screws. Upon their removal add at least one layer of glass inside the cabin area between the chine logs with multiples in the hard wearing cockpit area.

10. Repeat the foam installation along her topside inside areas, filling the tapered volume of full cockpit length buoyancy between chine logs and clamps before adding the plywood sheathing to protect the foam from impact while working the cockpit. Apart from coating the remaining open surface with epoxy, high wear sole areas in the wheelhouse and cockpit should receive at least one coat of glass cloth, more preferably multiples.

Epoxy plus varnish should do it in her cuddy. Throughout her interior coherent choices of plywood veneers coordinated with matching molding stock can readily yield a low maintenance warm/woody interior with lighter hues indicated in this smaller volume overall such as maple, birch, white, oak, etc. Consider coordinated but simple vinyl flooring on the sole for easy liftout replacement after years of wear without much maintenance. See Panel 8.

11. There she is, ready for various further steps but already looking like a boat. The by now solid hull shell will likely have to

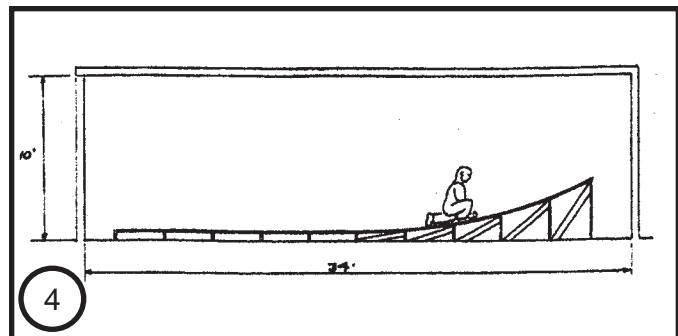
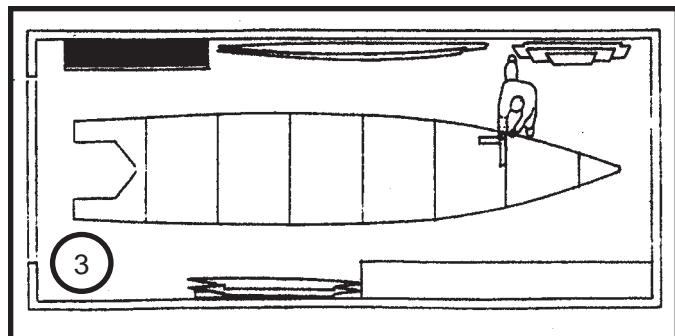
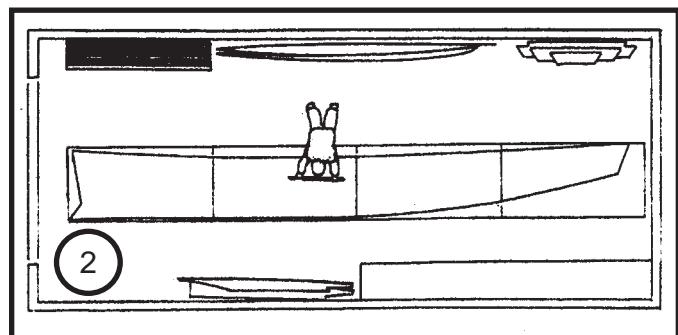
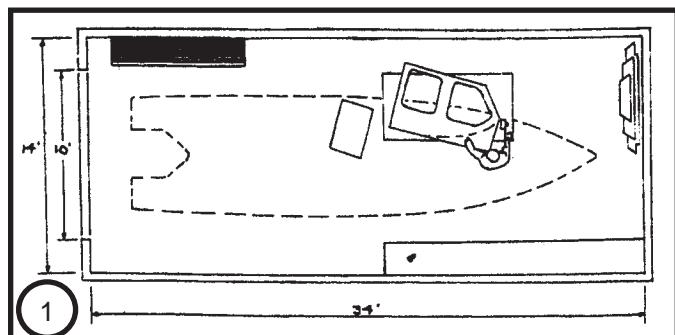
briefly be rolled over onto both sides about $80^\circ \pm$ to tape and finish the outside of the chine joint in a more ergonomic position, after which the hull should be ready for painting. See Panel 9.

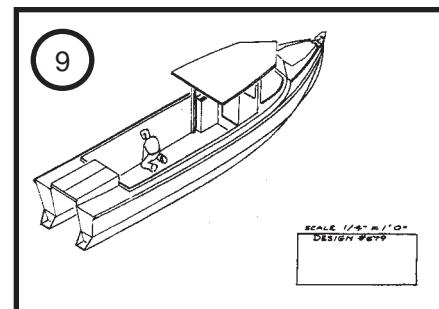
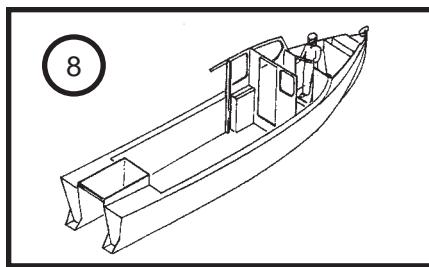
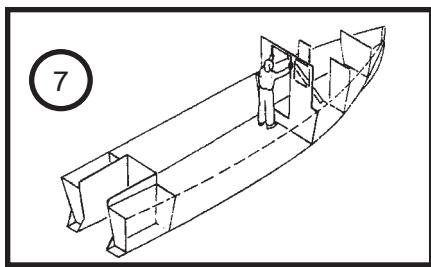
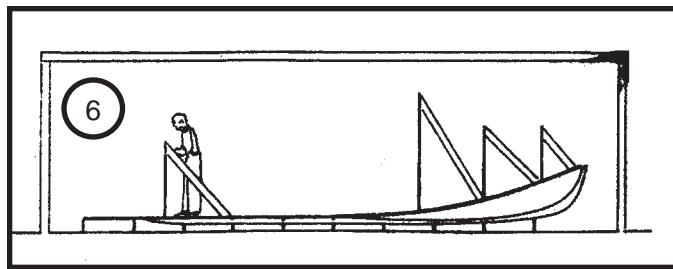
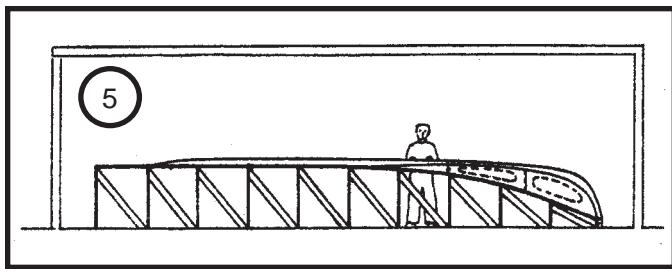
12. Additional hands will be needed to first turn the bottom 180° or later roll the hull those 80° either way even though much, if not all, can be done mechanically with, for instance, a 2,000lb shop hoist (\$300) used to pull car engines with its forward casters well slid under the panel to be lifted. 2"x4" levers will be handy along with an old mattress or car tire or two and some old blankets/comforters to keep edge abrasion to a minimum during those operations. At this stage of construction the hull assembly will probably weigh around 1,500lbs. You will know how and when to help yourself using mechanical aids.

13. Once the chine's outsides are finished, she will be rolled back upright and will stay that way while finishing her until the trailer arrives. While everything else should be installed and finished, do not yet permanently hang the motor and place the batteries until the boat is on the trailer to keep her weight as low as possible (probably around 1,700lbs) when hoisting/jacking her bow up high enough, to slide the trailer under her until its rollers allow positioning her perfectly fore and aft.

Consider, before starting, a coherent system of coordinated species and finish for structural cleats, stringers, coamings, edges, etc. that will remain visible. They will help set accents of, for instance, bright finished mahogany/oak/teak/maple, etc. in coordination with solid surfaces colors. She is not very big or complicated and you probably have a good idea what you want to see. We would not worry much about getting every detail just perfect as looking at your initial choices tempered throughout the construction process will suggest (hopefully) final adjustments in choices.

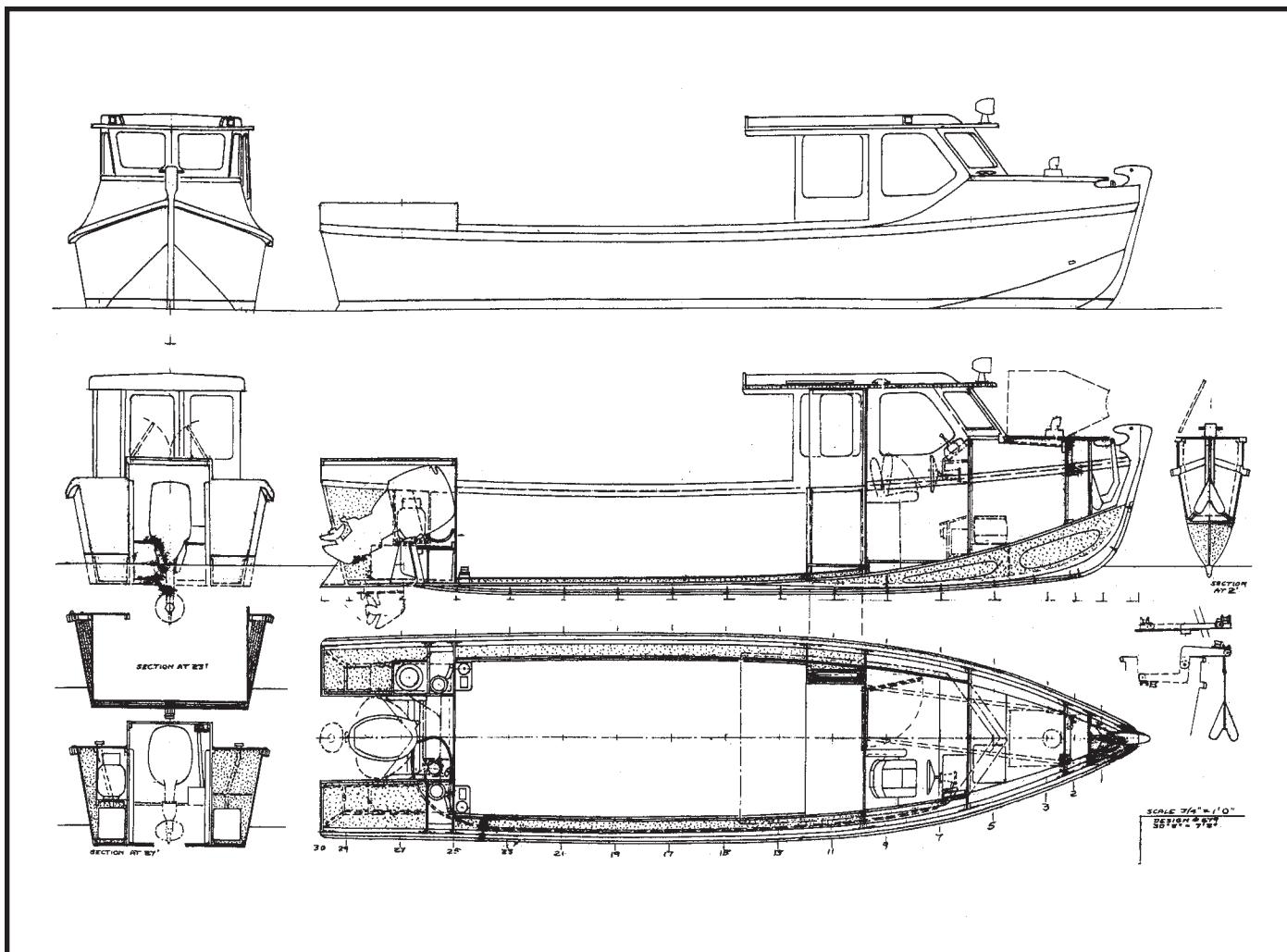
We'll have more to say on this subject, presenting larger concepts, designs, and updates on the politics of "Messing About in Fishing Boats."





Oversight . . .

Chapter 2 of this ongoing discussion of “Messing About in Fishing Boats” which appeared in the July 15 issue was supposed to have included these plans, but they were left out of the final layout in error and I did not spot the omission when I reviewed the final proofs. To reconnect the plans with the discussion refer back pp. 26–29 in that issue.



As some of you know from previous articles, I have been having a problem with water in the diesel fuel (see August 1, 2006 issue for my gravity filter idea). In the latest round the tanks were cleaned and all seemed OK until recently. We were out with the boat when the engine's rpm died and then the engine quit. I tried a restart and the engine started and died. I put the anchor over and started the check of the fuel system. Neither water strainer showed any water but the engine would not run.

I called for assistance on my VHF and a friendly couple towed us back to the dock. After another check of the fuel system I called the local diesel mechanic and asked that he look at the problem when he had a chance. About a week later he called to say there was water in the injector pump and in one secondary filter but no water had been caught by the water filter or the gravity filter. I have been reading about problems with ethanol in gasoline and seem to have a similar problem in my diesel fuel. There is an emulsified water/fuel combination flowing through to the injector pump.

At the present time, the choices seem to be to re-clean both 40+gal tanks, cut up the cockpit, and pull both tanks and put in replacements, or put in an external side tank and leave the main tanks where they are unused. Since I do not take long trips with the boat, a 15gal side tank may be my solution. Since both internal tanks are vented, the fill connection has gaskets, and I put in the appropriate additives, I am still searching for where the water is coming from and why it was able to get to the injector pump.

Thinking about engines brings to mind that the boating press is full of new boats and new motors. Most of these items seem expensive to those of us who have been boating for a while. A new outboard priced at some \$25,000 seems a little much to me, both in horse power (350 or so) and price. I can remember when my father's 35hp outboard was the latest on the market and pushed the boat quite nicely. You could change the plug(s) on the water, repair the carburetor, and otherwise keep things running.

Of course, I grew up in that era when people worked on cars, repaired/rebuilt the engines, and otherwise had a working knowledge of the mechanics of engines, automobiles, and boats. And vehicle and boat engines did not need to be hooked to computers to figure out what had failed. I still remember a local boat with a low compression engine that was started on gas, switched to kerosene when the engine was warmed up, and then went back to gas at the end of the trip. Talk about a version of fuel economy.

Of interest are the various alternatives to propel your boat. Of course, you have sails, oars, and paddles as the basics (with variations thereof). Each method has its costs and drawbacks. Sailing beats rowing or paddling for any distance in terms of ease but there is the cost of the sail(s), the mast, rigging, and the like. Oars and paddles both require the proper sized items and the physical stamina to get from Point A to Point B. There is also the pole. I grew up outside of Bradenton, Florida, and did a lot of boating on Sarasota Bay and Tampa Bay. Both bodies of water are fairly shallow and the "old timers" talked about taking cargo to Tampa across the bay using poles to push the boat when the wind was wrong or non-existent.

There are two technical alternatives to

From The Lee Rail

By C. Henry Depew

the current petroleum fueled internal combustion engine available with a little development work. The first is an alternative propulsion source, the "water motor" invented and patented (in 1982) by Francois P. Cornish. This device generates hydrogen on demand by the immersion of an aluminum wire in water and subjecting the wire to an electrical charge. The water reacts with the charged aluminum wire to produce hydrogen gas and an aluminum-oxide participate. Since the hydrogen gas is consumed by the engine as it is created by the system, there is no storage problem. Of course, a supply of suitable aluminum wire is needed and a way to refill the water container.

The second is the Stirling-cycle engine (patented in 1816) that can use any heat/cold source to spin the "motor." The motor works on the temperature differential created by the heat/cold source and the ambient air temperature. I have one of the demo Stirling-cycle engines that runs quite nicely when placed on a cup of hot water.

There is also a push from some quarters for an electric motor to drive the boat with a power source to run the generator(s) to run the motor(s) or generate the electricity and store it in a battery. The battery supplies the power to the motor and the generation system keeps the battery charged. The idea of electric propulsion has been around since the 1920s with the Tennessee class battleships. There is also the "diesel" locomotive where the engine drives the generators that power the motors in the wheels.

Either Cornish's hydrogen engine or Stirling's heat engine could be used to power a boat or to power the electrical generation system used to power a boat. Both are technically feasible. After all, a large motor would not be needed if it was only spinning the generator/alternator. If electricity was being provided directly to the electric motor, the generator size would increase accordingly.

Another approach is the so-called "magnetic/gravity" motor that would be used to spin the generator. While I understand the theory that makes Cornish's and Stirling's engines work, the magnetic/gravity motor is a mystery unto itself. One of the more famous of these engines was Howard R. Johnson's "permanent magnetic motor" that received publicity in 1973. Then there is Bedini's "Gravity Field Generator", and Charles Campbell's generator that uses large flywheels that would probably not fit on most boats. The idea is to use the magnetic repulsion property with permanent magnets mounted on the frame and other magnets mounted on the moving part.

Last, and most recently, is the concept of generating usable electricity from a heat source. "We are converting waste heat to electricity in an efficient, simple way by using sound," says Orest Symko, a University of Utah physics professor who leads the effort. "It is a new source of renewable energy from waste heat." While the creation of electricity from heat is not a new item (the kerosene lamp created the electricity that ran the radio at the family farm and the thermo control on a gas heater uses the pilot light's heat to keep the supply valve ready), the idea of using heat to create the sound that is converted to electricity is another story.

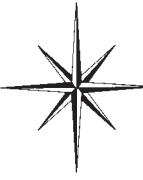
I will probably stick with my diesel engine and work on keeping the fuel clean. However, I am also watching the alternative approaches to see if a non-petroleum powered motor comes on the market that will supply adequate power at a reasonable cost. After all, even though pleasure boating does not consume a very large percentage of the fuel consumed in the United States, it is a sure bet it will be one of the first areas to be targeted for rationing if there is a fuel shortage.

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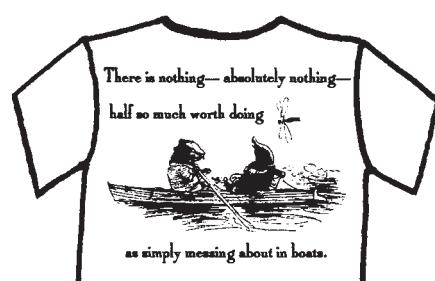


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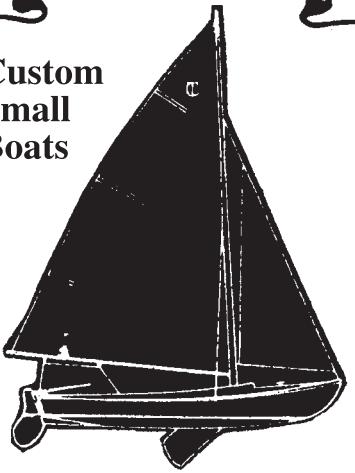
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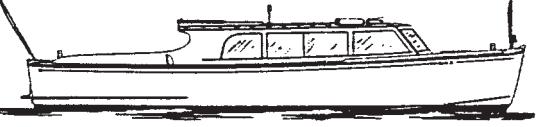
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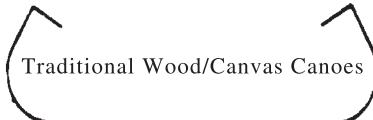
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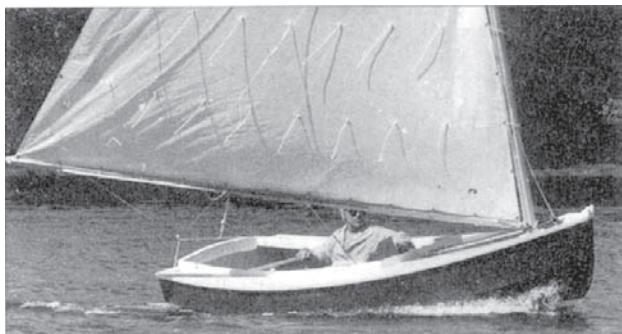
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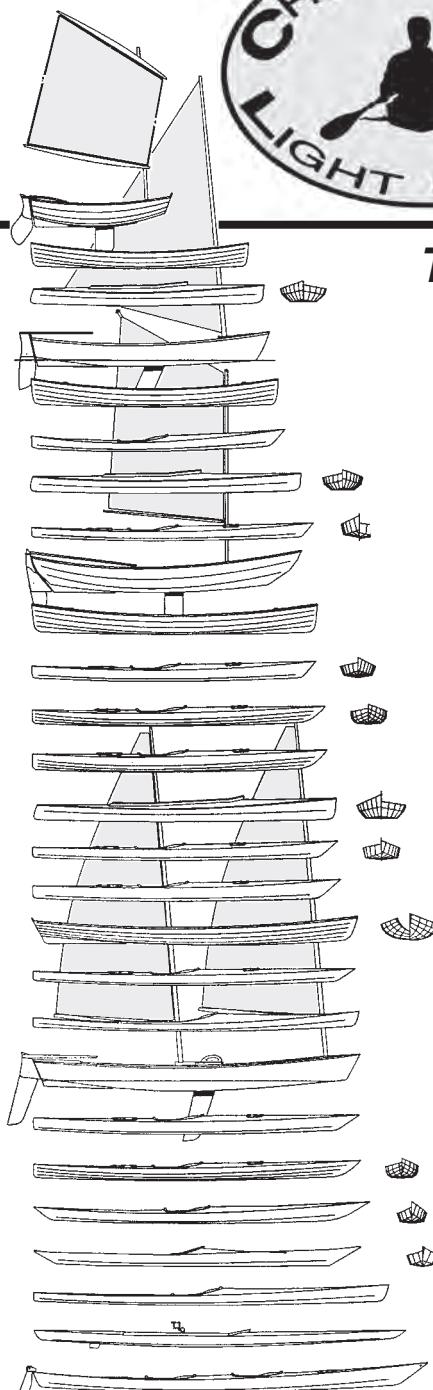
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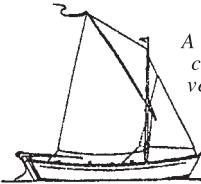
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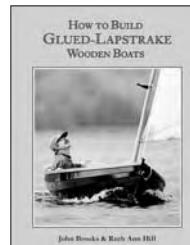


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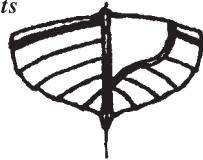
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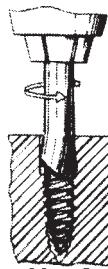


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'92 Peep Hen, gorgeous cond throughout. Manufactured by Custom Fiberglass of Florida, may be the very nicest one around. Forest green hull, white topsides, tanbark sail. Has all the trimmings: bronze opening ports, compl cushion set in bunks & cockpit, cockpit tent, Bimini top. Used only in fresh water. 4hp Mercury ob. Galv Performance tiltbed trlr w/bearing buddies. Sail cover and tiller cover. Protected from the elements by a large rubberized tarpaulin. Specifications: LOA 14'2", beam 6'4", draft 9"/3", weight 650lbs, sail area 115sf. This has been a wonderful boat but a younger owner is needed. Asking Price is \$7,850. Come and look!
FRED MOLLER, Wells, VT (802) 325-3411, frchmoll@peoplepc.com (7)

Hunter 23, wing keel, '86. Hull refinished in dark green Awlgrip. Full batten main. Extras incl depth, VHF, genoa track. New 5hp 4-cycle, long shaft Honda ob, trlr. In water in NE Ohio, come for trial sail. \$9,500.
RICHARD ELLERS, Warren, OH, (330) 399-6237, GeeRichard@aol.com (8)

21' Sea Pearl, white #144 on yellow sails. Incl trlr, 3.5hp Nissan, 2 sets of oars, water ballast tanks, tonneau cover repaired, camp cover new, 11lb Bruce anchor w/bronze bow chock, etc. Located in Stonington CT, and must be picked up there. Asking price is best offer over \$3,200. Before you call please go to <http://www.marineconcepts.com/sp21>. Or look in past MAIB issues for stories with this type of boat. A great boat, but it is time for me to move back to power if I can afford the gas. BO over \$4,000.
JIM CHASE, Stonington, CT, (860) 828-6311, (860) 535-2081 wknds, jimayo@sbcglobal.net (8)



24'x7' Diesel Launch, former USCG motor cargo boat. 5,100lbs displacement, 2' draft. Mahogany over oak, bronze fastened. 380 hours on rebuilt 24hp Yanmar 3GM30F. Boat in water & fully equipped. Tandem axle trlr. \$5,300.
ANDY HALL, Lynn, MA, (781) 592-5533 (8)



17'2" Chris Craft Sea Skiff, Serial #23438. 50hp Johnson ('71). \$3,000.
ROBERT MC LAUGHLIN, NH, (603) 569-8665. (8P)



18' "Campskeiff," the Chappelle original upon which the Stambaugh designed "Redwing" is based. A work in progress. Running lights installed but not wired into a panel. No panel installed yet. Battery box built in but no battery. Bunks built in w/storage under, no mattress pads. Built with/flip-up cabin top, no rain skirts installed nor anything as yet to hold the cabin top in flipped position. Cabin interior painted but not fitted out for camping. Incl model SLB30BS Shoreland'r 3,000lb capacity trlr w/brakes bought new for this boat. Power is 5hp Nissan 4-cycle motor. Giveaway price \$6,500.
BOB CHAMBERLAND, 1175 S. Peck Rd., Suttons Bay MI 49682, (231) 271-4231 (8)



30' Gaff-rigged Sloop, '60. This documented, double ender is John Hanna's classic Tahiti. Yanmar Diesel. Fully equipped. Sound cond. Safe & comfortable. Now cruising NE. Delivery possible. \$10,500.
VALMAR THOMPSON, Edgecomb, ME, (207) 88-7637 (8)

23' Ranger, fun racing/weekender. Main, jib, spinnaker in gd cond, genoa soso. Sugar scoop open transom. All internal work done, needs paint below & some TLC. \$3,950. 10.5' Double Ender Sailing Dinghy, John Lindsey Barker Island tender, like new. No sailing rig, but has a cb trunk. \$2,500.
ALAN BOYES, Trevett, ME, (207) 233-7501(8)

Sea Pearl 21, Serial #50 built '83. Highlander trlr, many items for camp cruising incl. \$4,500.
KEN KRAPPA, Fremont MI, (231) 924-3801 (8)



Beetle Cat, '63 #132. Exc cond, ready to sail. \$2,950 cash.
LEON POTHIER, Wooden Boat Restorations, Westfield, MA, (413) 562-2216 (8)



Stur-Dee Dory, 16', '79, fg. Good to exc shape. Wood rails & seats need replacement. Transom needs reinforcement. Seaworthy & safe fishing or pleasure boat. Planes w/25hp. \$750.
MICHAEL SHERWOOD, Woolwich, ME, (207) 443-4072, capnmike@hughes.net (8)



Midland, 19', '79, fg. 60hp Mariner w/36 original hours (not a rebuilt). Pwr. tilt, fixed & spare fuel tanks, 2 new batteries w/USCG 4-way switch, VHF, anchor & rode, running lights, PFDs, auto bilge pump, small ob bracket, fenders, dock lines, trailer w/new wheel rims, new tires & bearings, misc. equip. Covered. \$6,800.
MICHAEL SHERWOOD, Woolwich, ME, (207) 443-4072, capnmike@hughes.net (8)

Nymph Dinghy, Bolger designed w/custom made, lightweight oars, bronze oarlocks. Professionally built. Light weight easily caroppable. Hull red w/white boot top, blue bottom. Interior varnished. British Board of Trade "Plimsoll" marks on both sides, so that boat can't be overloaded with too many cases of beer or too many groceries. Enjoy a great dinghy for only \$450. See Nymph Dinghy on Google for details. 12' Shellback Rowing & Sailing Dinghy, Joel White design, built 1998 at WoodenBoat School under supervision of Eric Dow, w/added improvements made by present owner. All running rigging is new. Sail is like new. Oars are 7'-6" Shaw & Tenney spoon blade, w/inlaid tips and leathers. Oarlocks are bronze w/safety chains. Trailer is an all aluminum Trailex, Robb White's favorite. Hull white w/green stripe; white painted interior w/varnished mast, rails, seats, dagger board & rudder. Great rowing & sailing dinghy in exc cond. \$3,500 More information and photos at cbenneck@sbcglobal.net
CONBERT H. BENNECK, 164 Carriage Dr., Glastonbury, CT 06033, (860) 633-5351 (8)

'87 Dovekie, (#137) by Edy & Duff. 21' fg camping saidboat designed by Philip Bolger. Compl equipped except for personal equipment & ordinary camping supplies. Special Cox 2000lb galv trlr incl w/many extras such as back porch tent enclosure, special E&D ob bracket, '05 Honda 2hp 4-stroke ob, life jackets, boat cushions, Bruce anchor & rode, Richie compass, Balmar Seacock propane stove. Price, \$7000. Please call, write or email for more details, photos available.
KARL WEBSTER, 146 Jones Pt Rd, Brooksville, ME, 04617, (207) 326-9781, ksw@midmaine.com (8)

17' Grumman Sailing Canoe, canoe, mast, boom, red sail & 3 battens, kick-up rudder, dagger boards & bracket, all lines, all in gd cond. Square mast end mates to mast step on floor of canoe. Sail it or paddle it. \$800. Photos available at Fmiller2@rochester.rr.com.
FRED MILLER, Fairport, NY, (585) 415-2011 (8)

GEAR FOR SALE



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100 Issues of Messing About in Boats from '92 and earlier. Is there anyone who would like to have them? I can even deliver sometime this spring if requested.
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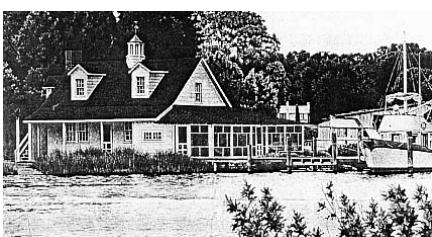
DOWN EAST DORIES, Dept. MB, Pleasant Beach Rd., S. Thomaston, ME 04858 (TF)

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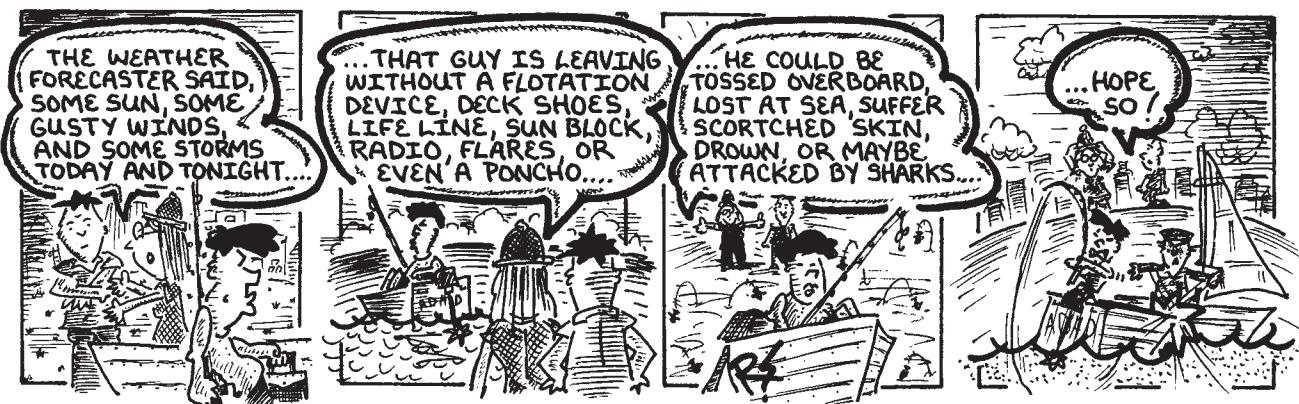
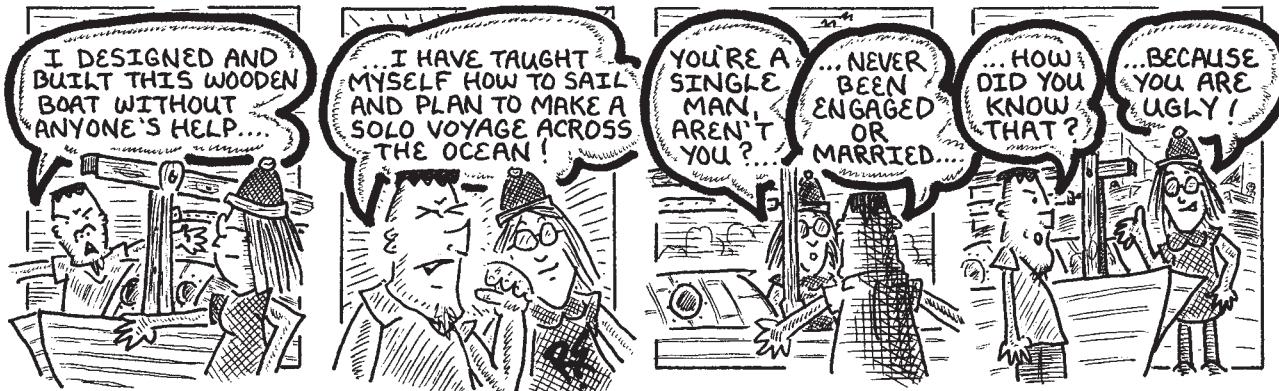
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Aug 3-5 Champlain Valley Folk Festival, Vergennes, VT On Water Demos

Aug 3-5 Antique & Classic Boat Show, Clayton, NY On Water Demos

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